EPIDEMIOLOGICAL STUDY OF NON STRUCTURAL CAUSES ABNORMAL UTERINE BLEEDING

Dissertation submitted to

The Tamilnadu Dr. M.G.R. Medical University

in partial fulfillment of the regulations
for the award of the degree of

M.S. – Branch II
OBSTETRICS AND GYNAECOLOGY

K.A.P. Viswanathan Government Medical College
Tiruchirappalli

The Tamilnadu Dr. M.G.R. Medical University
Chennai

April – 2013

BONAFIDE CERTIFICATE

This is to certify that the study entitled "**EPIDEMIOLOGICAL STUDY OF NON STRUCTURAL CAUSES OF AUB**" is a bonafide work done by **DR.J.KAVITHA** at **K.A.P.V Government Medical College, Trichy** during the period of Post Graduate study in Obstetrics and Gynecology from May-2011 to March-2013 under the guidance of **Prof.Dr.D.PARIMALA DEVI, MD., DGO**. This dissertation is submitted to The Tamilnadu Dr.M.G.R Medical University in partial fulfillment of University rules and regulations for the award of M.S. degree in Obstetrics and Gynecology.

Prof.Dr.E.KALARANI,
M.D., D.G.O.,
Professor of Obstetrics & Gynecology
K.A.P.V Govt Medical College
Trichy

Prof.Dr.Karthikeyan
MD, FM,
Dean
K.A.P.V Govt Medical College
Trichy

DECLARATION

I, **Dr.J.KAVITHA**, solemnly declare that the dissertation titled **"EPIDEMIOLOGICAL STUDY OF NON-STRUCTURAL CAUSES OF ABNORMAL UTERINE BLEEDING "** is a bonafide work done by me at K.A.P.V Government Medical college, Trichy, during 2011-2012 under the guidance and supervision of **Prof.Dr.D.PARIMALA DEVI MD., DGO.**, Professor in department of Obstetrics and Gynecology. This Dissertation is submitted to The Tamilnadu Dr. M.G.R. Medical University, in partial fulfillment of university rules and regulations for the award of M.S. Degree (Branch-II) in Obstetrics and Gynecology.

Place : Trichy

Date : **Dr. J. KAVITHA**

ACKNOWLEDGEMENT

I sincerely acknowledge and greatly thankful to **Prof. Dr. A. Karthikeyan, MD (FM) Dean**, K.A.P.V Govt. Medical College, Trichy for permitting me to carry out this dissertation work.

I am deeply indebted to my **Prof.Dr.E.KALARANI, M.D., DGO**. Professor of Obstetrics and Gynecology , K.A.P.V. Govt. Medical College, Trichy for her valuable help, constant supervision, continuous encouragement and guidance in completing this dissertation.

I am extremely thankful to my guide **Prof.Dr.D.PARIMALADEVI, M.D., D.G.O.,** for her help and guidance and correcting the manuscript.

I express my heartful gratitude to **Asst.Prof.Dr.S.THANGATHAI, M.D., DGO.,** Registrar and **Asst.Prof.Dr.P.BHAGYAVATHY. M.D., (OG),** for their help and assistance.

I am also thankful to **Prof.DHANAPAUL, HOD** Dept of Microbiology.

I also thank all other Asst. Professors, department of Obstetrics and Gynecology for their help and guidance in various aspects.

Last, but not the least, I thank the staffs of Medical Records Department, Mahatma Gandhi Memorial Govt Hospital for their untiring help.

K.A.P. VISWANATHAM GOVT. MEDICAL COLLEGE
TIRUCHI – 1
INSTITUTIONAL ETHICS COMMITTEE

CHAIRMAN

DR. PHILIP THOMAS

MEMBER SECRETARY

DR. S. DHANAPAUL

MEMBERS

DR. F. FLORENCE SHALINI

PROF.K.RUCKMANI

MR. R. MOHAN KRISHNAPURAM,

CERTIFICATE OF CLEARANCE

This is to certify that the dissertation titled **"Epidemiological Study of Nonstructural Causes of Abnormal Uterine Bleeding"** as part of the fulfillment of M.S(Obstetrics & Gynaecology) course 2011-2013 by Dr. J. KAVITHA of K.A.P. Viswanatham Govt. medical college, Tiruchy, has been cleared by the ethical committee.

MEMBERS

DR. F. Florence Shalini,
H.O.D. of Social Work,
Bishop Heber College
Tiruchy.

Dr. J. FLORENCE SHALINI,
Assistant Professor,
P.G. Department of Social Work,
Bishop Heber College,
Trichy - 620 017.

Prof. K. Ruckmani,
Head of the Department,
Pharmaceutical Engineering & Tech,
Anna University,

Dr. K. RUCKMANI
Prof & Head
Department of Pharmaceutical Technology
Anna University
Regional office, BIT Campus
Tiruchirappalli - 620 024

DR. J. Kaliamurthy,
Institute of Ophthalmology,
Joseph Eye Hospital, Tiruchy.

Dr.J. Kaliamurthy Msc, PhD
Associate Professor
Dept.of.Microbiology
Institute of Ophthalmology
Joseph Eye Hospital
Trichy - 620 001

MEMBER SECRETARY
DR. S. Dhanapaul,
Prof & H.O.D,
Dept of Microbiology,
K.A.P.V. Medical College,
Tiruchy.

Dr. S. DHANAPAUL, M.D.,
PROFESSOR OF MICROBIOLOGY
K.A.P.V. GOVT. MEDICAL COLLEGE
TIRUCHY

CHAIRMAN
DR. Philip Thomas
Institute of Ophthalmology
Joseph Eye Hospital, Tiruchy

Dr.PHILIP A. THOMAS, M.B.B.S., M.D., Ph.D.
M.A.M.S., F.A.B.M.S., F.I.M.S.A.,
PROFESSOR AND HEAD DEPT. OF OCULAR MICROBIOLOGY,
HEAD, DEPT. OF RESEARCH AND DEVELOPMENT,
INSTITUTE OF OPHTHALMOLOGY,
JOSEPH EYE HOSPITAL,
TIRUCHIRAPPALLI - 620 001

Turnitin Document Viewer - Windows Internet Explorer

https://www.turnitin.com/dv?o=294058551&u=1015095940&s=&student_user=1&lang=en_us

TNMGRMU APRIL 2013 EXAMINA... | Medical - DUE 31-Dec-2012 | What's New

Originality | GradeMark | PeerMark

epidemiologicl study of non structural causes of AUB

BY KAVITHA J SUBAS

turnitin 12% SIMILAR -- OUT OF 0

ABNORMAL UTERINE BLEEDING

INTRODUCTION

The most common presenting complaint encountered in the Gynecological practice, its incidence accounting as much as 30-40%. The availability of diagnostic tools such as ultrasound, clinical endometrial sampling and diagnostic hysteroscopy has made it possible to promptly diagnose and treat an increasing number of menstrual disorders is an office setting.

Menstruation is a cyclical phenomenon that routinely begins at menarche and ends at menopause. The normal menstrual rhythm is regulated and modulated by the hormones secreted by hypothalamus, pituitary and ovaries.

Match Overview

1	www.webmedcentral.com Internet source	2%
2	gineteca.com Internet source	1%
3	P. Kumar. "Association... Publication	1%
4	www.neurosci.pharm.uto.. Internet source	1%
5	Päivi Pakarinen. "Ther... Publication	1%
6	C.E.C. Kingman. "The Publication	<1%
7	mediawebsolutions.it Internet source	<1%
8	Charlotta Dabrosin. "S... Publication	<1%

PAGE: 1 OF 99

Text-Only Report

Done | Internet | Protected Mode: On | 100%

Desktop 11:45 23-12-2012

CONTENTS

INTRODUCTION

EPIDEMIOLOGICAL STUDY OF NON STRUCTURAL CAUSES ABNORMAL UTERINE BLEEDING

INTRODUCTION

The most common presenting complaint encountered in the Gynecological practice, its incidence accounting as much as 30-40%. The availability of diagnostic tools such as ultrasound, clinical endometrial sampling and diagnostic hysteroscopy has made it possible to promptly diagnose and treat an increasing number of menstrual disorders is an office setting.

Menstruation is a cyclical phenomenon that routinely begins at menarche and ends at menopause. The normal menstrual rhythm is regulated and modulated by the hormones secreted by hypothalamus, pituitary and ovaries.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

DEFINITION

Any bleeding from genital tract which is a deviation from normal in frequency, cyclicity or quantity.

INCIDENCE

In 10 – 30 % of reproductive age group of this 50 % is perimenopausal age group gives the history (Haynes 1971, Prentic 2000)

Premenopausal age group – Precocious puberty / accidental exogenous ingestion of drugs / ovarian neoplasms, need pelvic examination (Quint 2001).

NOMENCLATURE

Menorrhagia mensus more than 7 days, more than 80 ml blood loss as per (Hallberg, 1966.)

Wallberg (1966) technique to extract haemoglobin from sanitary napkins using sodium hydroxide.can easily assess the blood loss

Objective perception of blood loss of individuals is to define menorrhagia (Chimbra 1980, Fraser 1984).

Warner and Collegues (2004) Positive correlation of menorrhagia with passing clot 1.1 inches in diameter and changing pads more frequently than every 3 hours.

ADOLESCENCE

An ovulation -dysfunction and the coagulation defects at disproportionately higher levels compared to reproductive age (Classens 1981, Oval 2001, Smith 1998).

Reproductive age group 1 : 20 life time risk (Bangers 2004).

Perimenopausal age group : 70 % of gynaecological visit

Seltzer and Colleagues reviewed the 500 perimenopausal age group with AUB. 18 % had menorrhagia, metorrahagia and one fifth were premalignant.

MENOPAUSE

Choo and Colleague 1985 – Majority post menopausal bleeding were due to atropy of endometrium, malignancy most commonly.

Neuro Anatomy

Hypothalamus is a small neural structure situated at the base of the brain above optic chiasma and below the third ventricle. It is directly connected to pituitary gland and is the part of brain. Hypothalamus is well supplied and nourished by superior

hypophyseal and inferior hypophyseal arteries. Hypothalamus is regulated by 3 feedback loops.

1. **Long acting Loop :** Steroid hormones from ovary and androgens acting on hypothalamus.

2. **Short acting feedback loop :** Pitutary hormones.

3. **Ultra Short Acting Loop :** Within the secretions of Hypothalamus

Hypothalamus : The major secretary products are

- **Gonadotrophin releasing hormone (GnRH)** which controls and modulates the secretions of lutenizing hormone. LH and follicle stimulating hormone (FSH)

- **Corticotropin hormone releasing hormone (CRH)** controls and modulates the release of (ACTH) Adrenocorticotropic hormone.

- **Growth hormone releasing hormone (GHRH)** which regulates and modulates the release of growth hormone.

- **Thyrotrophin releasing hormone (TRH)** which regulates the secretion of thyroid stimulating hormone.

Hypothalamus is kept dormant under the inhibition of adrenal cortex and temporal lobe.

1. Emotional stress tends to stimulate or inhibit HPO axis

2. Ephedrine and serotonin tends to stimulate HPO axis

3. Serotonins and opiates tends to inhibits HPO axis

4. Gonadotrophin's also tends to inhibit HPO axis

GnRH secreted by median eminence and the arcuate nucleus which modulates secretory activity of FSH and LH. It also secretes prolactin inhibiting factor which inhibits the release of prolactin.

GnRH is a decapeptide with a half life 2-4 min. It is released in pulsatile manner into portal vessels and reaches anterior pituitary gland. In preovulatory phase, pulse is once in 60 minutes. In luteal phase once in 3 hours with increased amplitude.

Pituitary gland

Pituitary gland lies in sella turcica. It comprises of anterior or posterior pituitary

FSH

Follicle stimulating hormone is water soluble, glycoprotein of high molecular weight which is secreted by βcells. FSH controls the ripening of the primordial follicles and is conjunction with the LH it activates. Secretions of Estrogen. Half life of FSH is 4 hours. Estrogen suppresses FSH secretion. It develops LH receptors in the granulosa cells.

LH

Luteinizing hormone is another water soluble glycoprotein of high molecular weight secreted by β cells. Along with FSH it activates the secretion of estrogen brings about the maturation of ovum and causes ovulation and then completes reduction division of oocyte.

Endogenous Opiods and Effects on GnRH

1. Endorphins usually have endogenous morphine like activity inhibits regulation of temperature, appetite and behaviour.

2. Enkephalins – have the main function is to regulate autonomous nervous system.

3. Dynorphins – similar to endorphins produces behavioral changes and high analgesic property.

4. Endorphins inhibit GnRH in hypothalamus thereby decreasing gonadotrophins.

5. Ovarian sex steroids can increase central endorphins thereby decreasing gonadotrophins.

Prolactin – 198 amino acid polypeptide secreted by anterior pituitary in under the inhibitory control of hypothalamic secretion of dopamine increased prolactin levels cause amenorrhoea and galactorrhoea. prolactin secretion is stimulated by breast manipulation, drugs, stress, exercise, TRH, vasopressin, γGABA

dopamine, βendorphins. VIP, Epidermal growth factor, angiotensin, TRH – Thyrotrophic Releasing hormone is also synthesized primarily from the arcuate nucleus of hypothalamus.

Normal Menstural Cycle

Normal menstural rhythm occurs once in 28 days cycle. First day of mensturation refers to day 1 of menstural cycle. Menstural cycle consists of ovarian cycle and endometrial cycle. Ovarian cycle includes follicular phase during which all the ovarian follicles develop and Luteal phase during which corpus Luteum forms and later regresses. Day 1-14 of the cycle is the follicular phase. Day 14-28 is called the luteal phase. Endometrial cycle consists of proliferative and secretory phase corresponding to the two cycles of ovary.

Sequence of changes during menstural cycle

1. Under the effect of tonic pulsatile secretion of LH throughout the folicular phase of the cycle the theca cells synthesise androstenedione.

2. This is transferred to the granulosa cells where FSH stimulated aromatase action induces estrogen secretion.

3. This exerts a negative feedback loop on the pituitary and hypothalamus thereby reducing FSH levels.

4. High levels of estrogen trigger LH surge simultaneously.

5. LH surge trigger ovulation

6. Theca cells of the corpus luteum secrete progesterone.

7. Luteinised granulosa cells of the corpus luteum secrete estrogen leading to the second estrogen phase

8. Estrogen and progesterone concentrations decrease with the demise of corpus luteum in the late luteal phase.

Endometrial Function and Molecular Biology

Cyclical shedding of endometrium resulting in menstruation is a unique function of the uterus.

Steroid Hormone Receptors

Steroid receptors are proteins that are found in the cytoplasm or nucleus of eukaryotic cells which bind to and regulate the transcription of DNA under the regulation of steroid hormones.

The hormone gene superfamily is divided into three functionally distinct subfamilies. These subfamilies are:

Type I are classical steroid hormone receptors which include the glucocorticoid receptors (including CORT receptor), androgen receptors, mineralcorticoid receptors (including ALDO receptor) and progesterone receptor.

Type II consists of thyroid hormone related receptors including T3R, RAR, RXR and VDR.

Type III is formed by the ER (estrogen receptor) and a few orphan receptors.

Estrogen Receptors

17-β estradiol is the most biologically potent naturally occurring estrogen, is secreted by the granulosa cells of dominant follicle and luteinized granulosa cells of the corpus luteum. Estradiol action is complex and appears to involve two classical nuclear hormone receptors. Gustafsson review (1999) shows the distribution of ERα and ERβ.Estradiol and other bioactive estrogens cause the replication of the endometrium indirectly i.e. through action of stromal cells through their receptors. ERβ is mostly expressed in glands, stroma and vascular cells of the endometrium. ERβ levels are highest during the proliferative phase of the cycle.

Progesterone Receptor

Progesterone mainly acts through nuclear hormone receptors. Progesterone enters cells by diffusion in responsive tissues. There are two isoforms of the human progesterone receptor

Progesterone receptor type A (PR-A)

Progesterone receptor type B (PR-B); Both arise from a single gene (chromosome 11q22).

Endometrial Cycle

Proliferative Phase

Follicular –phase production of estradiol is the most important factor in recovery of the endometrium following menstruation. Stroma cell proliferation appears to increase through paracrine and autocrine action of estrogen and increased local levels of fibroblast growth factor-9 (Tsai et al., 2002). Estrogens also increase local production of vascular endothelial growth factor (Sugino et al., 2002) which causes angiogenesis through the elongation of vessels in the basalis.

Secretory Phase

After ovulation the estrogen-primed endometrium responds to rising levels of progesterone in a highly predictable manner. By day 17, glycogen accumulated in the basal portion of the glandular epithelium creating subnuclear vacuoles and pseudostratification. This is the result of the direct progesterone action through progesterone receptors expressed in the glandular cells.

Estradiol action is also decreased because of glandular expression of type-2 form of 17β-hydroxysteroid dehydrogenase, which converts estradiol to the less active estrogen, estrone.

Menstruation

The events leading to menstruation are initiated as a result of the withdrawal of progesterone following luteolysis or corpus luteum, many of the molecular mechanisms involving endometrial progesterone withdrawal as well as the subsequent inflammatory response that causes the sloughing of the endometrium(Critchley et al., 2001).

Infiltration of polymorphonuclear leukocytes into the stroma occurs on the day or two immediately preceding the onset of menstruation which gives a pseudo inflammatory appearance to the tissue. The endometrial stromal and epithelial cells produce interleukin-8 (IL-8), a chemotactic activating factor for neutrophil;s. This IL-8 helps to recruit neutrophils into the endometrium (Arici 1993). The rate of synthesis of IL-8 and MCP-1 in the endometrial cells appear to be modulating by circulating sex steroid hormones and local production of transforming growth factor β (Arcici 1996 a, 1996 b).

The infiltration of leukocytes is considered key to initiation of extra cellular matrix breakdown of the functionalis layer. The rising level of metalloproteinases tips the balance between proteases and protease inhibitors, effectively initiating degradation of matrix resulting in the initiation of menstruation (Dong et al., 2002).

Prostaglandin & Menstruation

Prostaglandins are most often synthesized within the same tissue in which they act through the autocrine or paracrine mechanisms. They act through a host of separate but specific plasma membrane G-protein linked receptors. A role of prostaglandin, especially prostaglandin $F_2\alpha$ ($PGF_2\alpha$), which is a vasoconstrictor in the initiation of menstruation, has been suggested (Abel 2002).

Vasoactive Peptides and Menstruation

One is the endothelin-enkenphalinase system. The endothelins –ET-1, ET-2, WET-3- are small, 21-amino acid peptides, ET-1 is the potent vascoconstrictor, a product of vascular endothelial cells. Endothelins are degraded by the enzyme enkephalinase, which is localized in endometrial stromal cells and its specific activity is proportional to the level of progesterone in blood (Casey et al., 1991).

Mechanism controlling onset and Cessation of Endometrium.

- ✪ Menstruation is by ischemic necrosis of endometrium caused by vasoconstriction of spiral arterioles in the basal layer triggered by estrogen and progesterone withdrawal.

- ✪ Histologically menstruating endometrium demonstrates focal necrosis inflammators any coagulation rather than the diffuse hyalinization and coagulation necrosis expected in hypoxia

Classic Concept

Initiation of menstruation is an enzymatic autodigestion of the functional layer of endometrium and its subsurface capillary plexus; possibly extending to spiral arteries of basal layer.

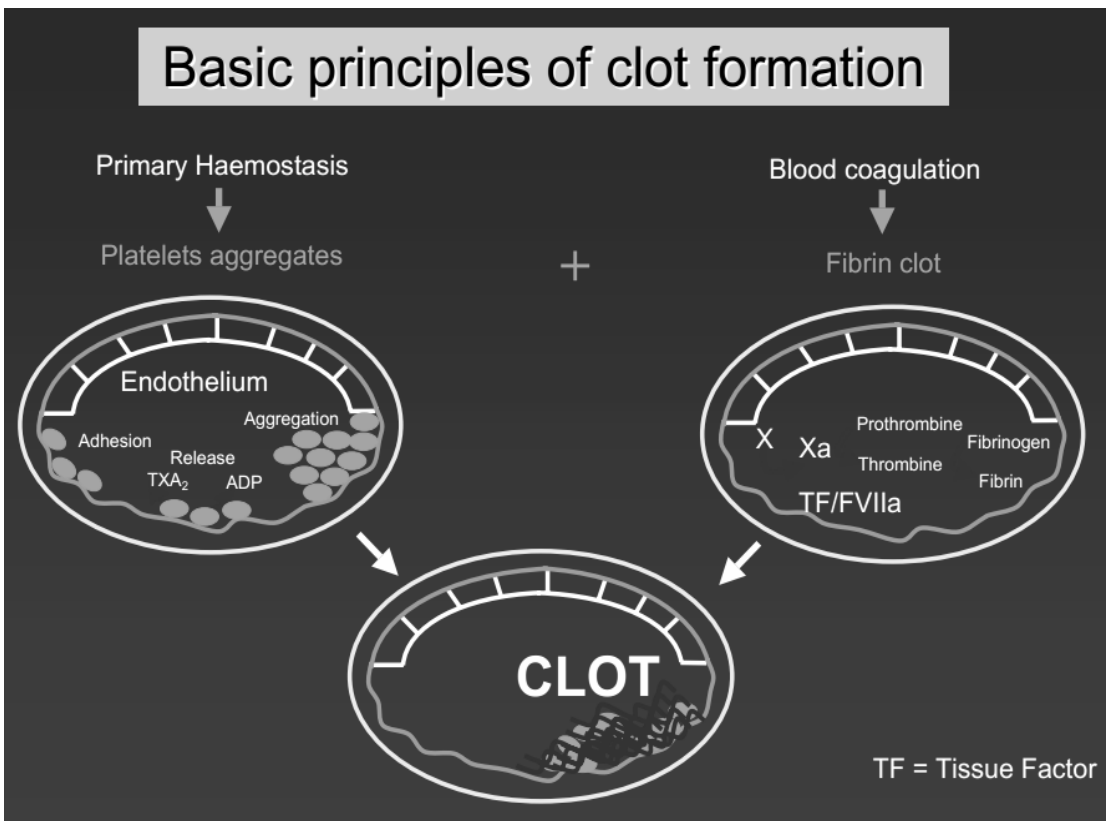
Enzymatic degradation of release of intracellular lysosymal enzymes and Proteases from infiltrating inflammatory cells and actions of matrix metalloproteinases causes degradation of the endometrial cells.

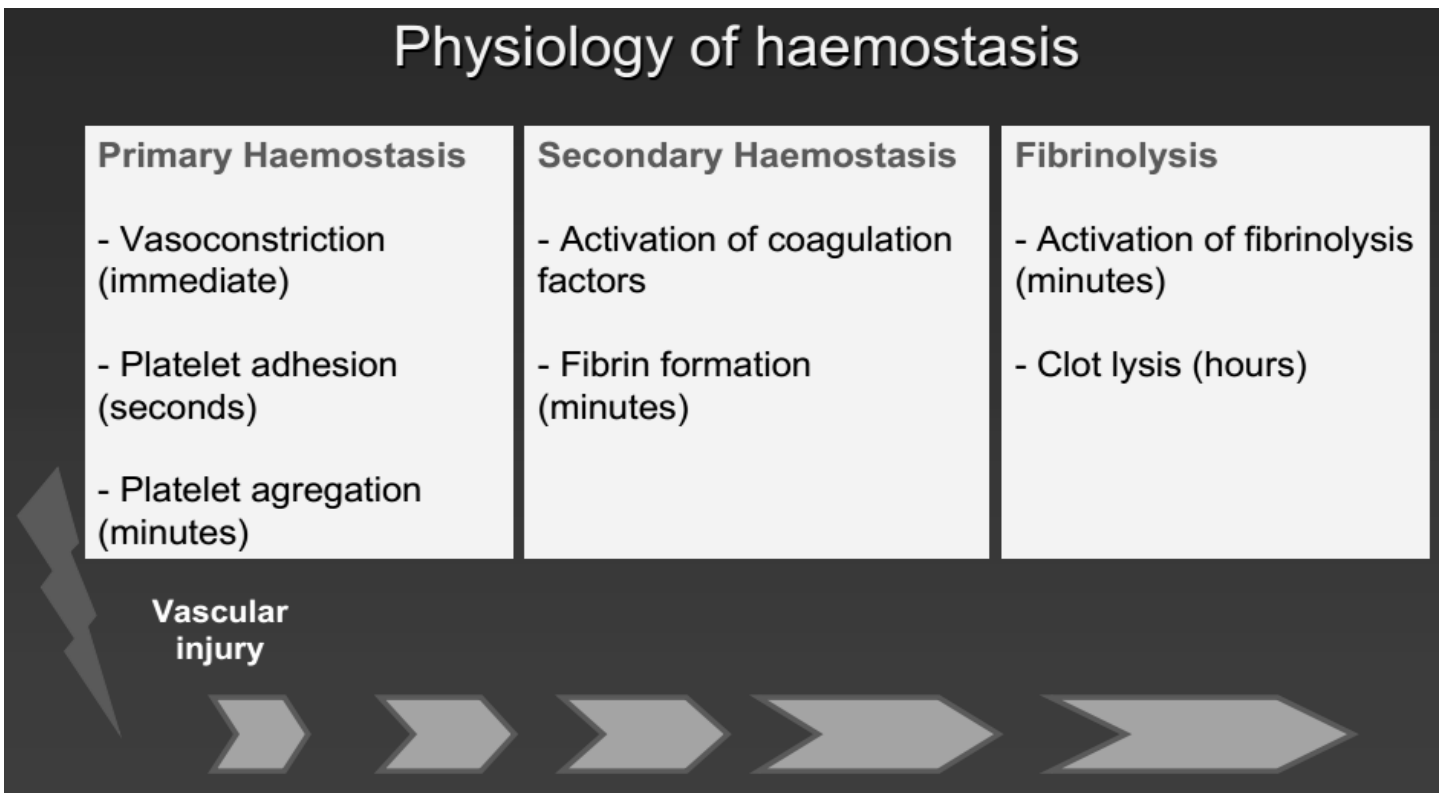
Arrest of Bleeding depends on 3 mechanisms

1. Hemostasis by platelet plug and clot formation

2. Prostaglandins mediated vasoconstriction

3. Tissue repair


Basic principles of clot formation
Primary Haemostasis
Platelets aggregates
Blood coagulation
Fibrin clot
Endothelium
Aggregation
Adhesion
Release
TXA2
ADP
X
Xa
Prothrombine
Fibrinogen
Thrombine
Fibrin
TF/FVIIa
CLOT
TF = Tissue Factor

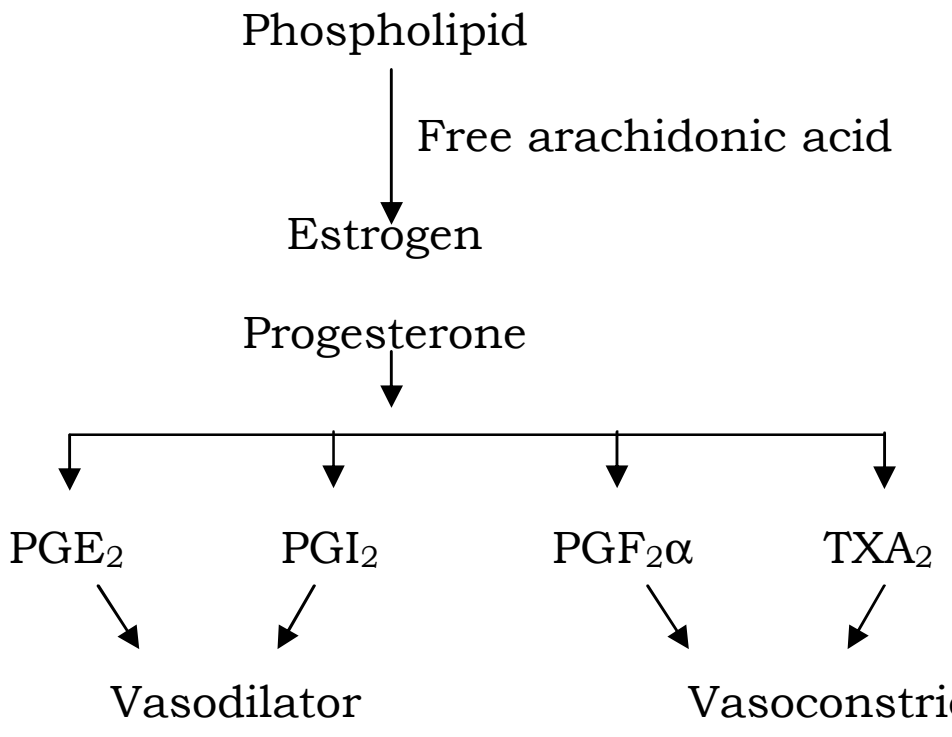

Physiology of haemostasis
Primary Haemostasis
- Vasoconstriction (immediate)
- Platelet adhesion (seconds)
- Platelet agregation (minutes)
Secondary Haemostasis
- Activation of coagulation factors
- Fibrin formation (minutes)
Fibrinolysis
- Activation of fibrinolysis (minutes)
- Clot lysis (hours)
Vascular injury

1. **Hemostasis by platelet plug and clot formation**

Coagulation cascade starts functioning of endometrium clots form on the vessels. Platelet aggregation leads to platelet plug formation once the bleeding stops and allows the fibrinolytic activity and favours free flow of menstrual fluid.

2. **Prostaglandins (PG) mediated vasoconstriction**

Arachidonic acid, a lipid from cell wall is a substrate for the synthesis of prostaglandin and enzyme prostaglandin synthetase present in the endometrium.



- ✪ Estrogen produces $PGE_2 : PGF_2\alpha$ = 1 : 1
- ✪ Progesterone produces $PGE_2 : PGF_2\alpha$ = 1 : 2

So the bleeding is controlled.

3. Tissue repair

Re-epithelisation takes place after shedding of endometrium at the mouth of basal glands. Epidermal growth factors, fibroblast growth factor, vascular growth factor are the local hormones established for tissue repair.

Adolescent – Abnormal Bleeding (NOVAKS)

During the first 2 to 5 years after menarche most cycles are anovulatory. The mean duration of menses is 4 to 7 days. Last 7 days the average blood loss per cycle is 35 ml. Major component of menstrual discharge is endometrial tissue.

Menstrual cycle frequency is 21 – 45 days

Cycle variation from cycle to cycle is less than adults

Duration of flow is 4 – 8 days

Volume of flow is 4 to 80 ml

Transition from anovulatory to ovulatory cycles. During adolescence takes place during the first several years after menarche, it results from maturation of hypothalamic – pituitary axis. Most adolescents have ovulatory cycle by the end of second year of menarche.

Causes

1. Eating disorders (Anorexia nervosa, Bulimia nervosa)

2. Excessive physical exercises

3. Chronic illness

4. Primary ovarian insufficiency

5. Alcohol abuse

6. Stress

7. Thyroid disease (hypothyroidism, hyperthyroidism)

8. Androgen excess (pcos)

9. Diabetes mellitus

10. Coagulopathy

11. Pregnancy

12. External hormonal use

Whom to suspect bleeding disorder

1. Heavy menstrual bleeding since menarche

2. Family history of bleeding disorder

3. Personal history

- ✪ Epistaxis in the last year
- ✪ Bruising without injury > 2cm diameter
- ✪ Minor wound bleeding
- ✪ Oral or gastrointestinal bleeding without anatomic causes
- ✪ Prolonged or heavy bleeding after dental extraction
- ✪ Unexpected post operative bleeding
- ✪ Hemorrhage from ovarian cyst
- ✪ Hemorrhage requiring blood transfusion
- ✪ Post partum hemorrhage especially delayed > 24 hr

Failure to respond to conventional management of menorrhagia.

Normal menses in reproductive age group

Mean duration of menses 4 days average blood loss 35 ml.

Menstrual cycle frequency is 24 – 38 days

Duration of flow is 4 – 8 days

Cycle variation is from cycle to cycle 2 – 20 days

Volume of flow is 4 to 80 ml

Causes

1. Pregnancy related complaints

2. Dysfunctional uterine bleeding

3. Exogenous causes

4. Fibroid endometriosis

5. Adenomyosis

6. Anovulation pcos

7. Exogenous hormone

8. Thyroid dysfunction

9. Medication related – Antipsychotics, coagulant, SSRI

10. Hepatic / renal causes

Definitions

Amenorrhea	:	Absence of menstruation
Oligo menorrhea	:	In frequent irregularly timed periods interval > 35 days
Poly menorrhea	:	Frequent episodes of menstruation intervals < 21 days
Menorrhagia	:	Regularly timed episodes of bleeding excessive amount > 80 ml duration flow > 5 days
Metrorrhagia	:	Irregularly timed periods super imposed on normal cycle

Meno-metrorrhagia	:	Excessive prolonged bleeding, irregularly timed
Hypomenorrhoea	:	Regularly timed scanty episodes of bleeding
Inter menstrual bleeding	:	Bleeding inbetween normal cycle
Precocious menstruation	:	Before the age of 10 years
Post coital bleeding	:	Vaginal bleeding after intercourse
Acute emergent AUB	:	Bleeding characterized by hypovolemic shock
Post menopausal bleeding	:	>1 year of duration of amenorrhea

Dysfunctional Uterine Bleeding (Jefcottes)

Abnormal bleeding from genital tract without any demonstrable pelvic pathology and systemic disease. It is a diagnosis of exclusion because of alteration of HPO axis and local changes in prostaglandin production.

DUB is broadly divided into two types.

Anovulatory Bleeding (80 %)	Ovulatory Bleeding (20%)
Threshold bleeding of puberty	Idiopathic ovulatory Irregular ripening Irregular shedding
Premenopausal DUB	Luteal phase defect
Metropathia haemorrhagica	Following IUCD and post sterilisation operation

FIGO CLASSIFICATION SYSTEM

PALM-COEIN for causes of abnormal uterine bleeding in non-gravid women of reproductive age group.

PALM Structural causes

- Polyp
- Adenomyosis
- Leiomyoma
- Malignancy

COEIN Non Structural causes

- C Coagulopathy
- O Ovulatory dysfunction
- E Endometrial
- I Iatrogenic
- N Not yet identified

DUB Previously used for classification systematic or organic pathology should be abandoned. WHO fit into this category have a combination of coagulopathy disorder of ovulation and primary endometrial disorder.

Leiomyoma and Malignancy have a FIGO Classification System

AUB(C) Coagulopathy

1. 13 % evidence of Von Willebrand's disease
2. Immune thrombocytopenic purpura
3. Systemic disorder liver and renal diseases
4. Women using anticoagulants

Ovulatory Dysfunction [AUB(O)]

Ovulatory disorders can contribute to the genesis of AuB generally manifesting as a combination of unpredictable timing of bleeding and variable amount of flow.

Endocrinopathies	Polycytic ovary syndrome
Hypothyroidism	Hyper prolactinemia, mental stress
Obesity	Hyper prolactinemia, mental stress
Exercise	Severe athletic training

Drugs that impact serotonin uptake, phenothiazines, tricyclic antidepressants.

Endometrial (AUB-E)

Mechanism regulating endometrial hemostasis deficiencies of local production of vasoconstrictors

1. Endothelin $PGF_{2\alpha}$
2. Accelerated Lysis of endometrial clots by excessive production plasminogen activator.
   - ✪ Defects in endometrial repair

- ✪ Inflammation and infection
- ✪ Abnormalities in local inflammatory response
- ✪ aberrations to endometrial vasculogenesis
- ✪ Demonstration of infection such as chlamydia trachomatis & Tuberculosis

Iatrogenic (AUB-I)

1. Medicated inert intra uterine system
2. Gonadal break through bleeding, estrogens, progesterone, missed, delayed erratic periods, using along with rifampicin and griseofulvin, cigarette smoking can reduce contraceptive effects.

   Women experience unexplained spotting. Intrauterine (LNIUD) is first 3-6 months.

   Drugs resulting inhibition of prolactin release causes prolactin related disruption consequent disorders of chronic anovulation.

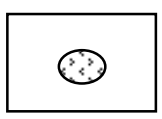
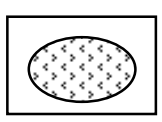
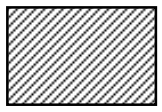
Not Yet Classified [AUB(N)]

AUB in given individual if not yet identified by chronic endometritis. AV malformation myometrial hypertrophy, biochemical and molecular assays would be defined only by specific assays. If diagnosed, they will be included by appropriate technology.

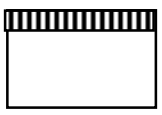
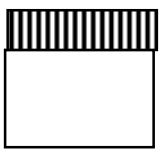
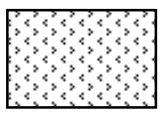
Pictorial Blood Assessment Score

Score > 100 suggests menorrhagia PBAC Score.

towel

1		1 point	1 paise clot
5		5 point	5 paise clot
10		5 point	flooding

Points Tampon

1	
5	
20	

Semi quantitative method of blood loss

Sensitivity 86 % Specificity 89 %

Jasen et al., Revalidated PBAC score > 155

Reid et al., Doubts on PBAC score validity

Assessing Blood loss by history

1. Changing pads <3 hours intervals
2. > 21 pads / cycle
3. Multiple pad changes at night
4. Clots > 1.1 inches
5. Anemia

Bleeding disorders causing AuB

1. Disorders of platelet adhesion

i Inherited

1. Bernard soulier syndrome
2. Von Willebrand's disease

ii Acquired

1. uremia
2. Acquired Von Willebrand's Disease

2. Disorders of Aggregation

i Inherited

1. Glanzman's thrombasthenia
2. Afibrinogenemia

ii Acquired

1. Fibrin degradation products
2. Dysproteinemias

3. Disorders of granule release

i Inherited

1. Oculo cutaneous albinism
2. Chediak Higashi syndrome
3. isolated dense S. Granule
4. Gray platelet syndrome

ii Acquired

1. cardiopulmonary bypass
2. Myeloproliferative disorder
3. Drugs aspirin NSAIDS

Thrombocytopenia

1. Deceased bone marrow production
2. Sequestrations of usually enlarged spleen
3. Increased platelet destruction

Most common causing menstrual disorders

Carriers of hemophilia A

Carriers of hemophilia B

Von Willebrand's disease

fXI deficiency

Idiopathic Immune Thrombocytopenic purpura

Idiopathic (Immune) Thrombocytopenic purpura

ITP are classified as acute ITP is common in children and accounts for 90 % of pediatric causes of ITP. Mostly recover in 4-6 weeks. Acute ITP is rare adult < 10 % of post pubertal system with immune thrombocytopenia due to the immune complexes binding against the platelet fC fraction or by antibodies against viral antigens.

Most adults present as chronic ITP Women of age 20 to 40 years women: men ratio 3:1 with a past history easy bruising or menometrorrhagia Idiopathic TP 0 mutation of ADAM TS13 gene.

Diagnosis

1. Lab testing for antibodies serological testing is usually not useful due to low sensitivity and current testes. (Antinuclear antibody non specific)

2. Peripheral smear shows large platelets otherwise normal morphology and Hepato splenomegaly.

Lab. Inv.

HIV hepatitis C, Serum protein electrophoresis, Hypogamma globulinemia, IgA deficiency, Monoclonal gammapathies

Von Willebrand's disease – Most common

Inherited bleeding disorder – occurring in 1: 800: 1000 individuals. Heterogenous multimeric plasma glycoprotein.

✪ It facilitates platelet adhesions under conditions of high stress.

✪ It serves as a carrier of factor VIII anti-hemophilic factor

✪ Normal plasma VWF levels > 10 mg/dl

3 major types VWD

Type I Milder form hemostasis (50 % activity)

Type II Less common normal or near normal activity VWF is a qualitative defect.

Type III Severe form (offspring of both parents usually asymptomatic)

Acquired VWD - Waldenstorm's macroglobulinemia, Wilm's tumour, Lymphoma

Von Willebrand's Disease

It is defined clinically as disease of women as described in 1926 by Eric Von Willebrand in his first booklet.

Diagnosis by

- ✪ Prolonged BT/aPTT
- ✪ Von Willebrand's factor Ag : assay
- ✪ Von Willebrand's factor AC
- ✪ Factor VIII assay

Prolonged aPTT alone is documented in mild forms prolonged aPTT without clinical bleeding in $HMWK_1$, PK_1, FXII, FXI, FIX, FVIII deficiency

Prolonged PT : Factor VII, Vit. K deficiency warfarin anticoagulants, Liver disorders.

Hemophilia A

Factor VIII deficiency is an x linked recessive disorder. Factor VIII, a coagulant protein is Synthesized in Liver and circulated. Deficiency of < 5 % Factor VIII is Mild, 5% - 10 % being moderate and > 10 % is severe disease

Hemophiliacs A are male patients. Carrier hemophiliacs are assessed with perioperative factor VIII levels.

Hemophilia B

Factor IX single protein activated to IX A. Synthesized in liver and activated by Vitamin K.

Factor XI deficiency

Factor XI deficiency 160 KDA diamino protein activated to active protease inherited as autosomal dominant pattern. It will present as post menopausal or peri operative bleeding.

Any patient with prolonged APTT should be evaluated for factor IX, VII, XII assays.

Menstrual scores with inherited bleeding disorders

Sl. No.	Description	PBAC Score
1	Causes of Hemophilia A	111
2	Causes of Hemophilia B	115
3	Von Willebrand's disease	139
4	Factor XI deficiency	108
5	Idiopathic thrombocytopenic purpura	100

- ✪ VWF Disease has an incidence 1.2 % as per Rodeghiero, 1987
- ✪ Abnormal bleeding and normal pelvic anatomy as per Sharper, 2004
- ✪ This disorder more common is in Caucasian than in African or in as per American Women Miller, 2003.
- ✪ VWD accounts for Menorrhagia in 60-70%of the cases as per Kadir, 1998
- ✪ According to ACOG 2001, needs ristocein cofactor VWF and CO for diagnosis.

- ✪ VWF related menorrhagia (Elnasher, 2007), Kabir 2004 says endometrial ablation for VWF.

In a survey 99 cases from hemophilia society in UK, 78 % of type I Von Willebrand's disease, had heavy menstrual periods.71 % required medical attentions 15 % required hysterectomy. Ragini et al., 93 % of 38 women with Von Willebrand's disease suffered from heavy menstruation. 53 % of them have prolonged periods since menarche. Mauser Bunschoten et al.,says Subjective menorrhagia is reported. Foster et al., (1995) 23 % of Von Willebrand's disease type 2 and type 3 had hysterectomy. NSAIDS are avoided in bleeding disorder because it will affect the coagulation profile.

New York Study

Type I Von WIllebrand's disease (Midcycle pains) (Mittleschmerz) has been experienced because of subsequent haemorrhage into corpus Luteum and peritoneal irritation due to bleeding edges.

Prevalence of merrorrhagia in Von Willebrand's disease

Sl. No.	Author	Number of Study	Prevalence
1	Ediund et al.,	30	20 %
2	Kadir et al.,	150	13 %
3	Dilley et al.,	121	7 % or all 16 % in Caucasians
4	Woo et al.,	38	13 %
TOTAL		339	10.9 %

RCOG 1999, guidelines for the AUB, recommends that those who have bleeding disorders should have a coagulation profile done (Recommendation Grade C).

2001 ACOG guideline screening for Von Willebrand's disease should be done in all adolescents with menorrhagia as well as adults with no pelvic pathology and in all women prior to hysterectomy.

Dilley et al., says 50 % Von Willebrand's disease clinically presents as menorrhagia. 4 % had factor IX deficiency.

Philip et al., abnormal platelet aggregates and decreased platelet ATP release. 47 % of patient with menorrhagia. One

diagnosed thrombocytopenia most common cause of adolescent menorrhagia. 13 % incidence in 10-19 years.

Diagnosis of bleeding disorder is essential

- ✪ It enhances rapid and effective treatment of cases.
- ✪ If surgical interventions are necessary, the risk of bleeding disorders and complications can be minimized and morbidity decreases.
- ✪ Genetic clarifications and important implications management and prenatal diagnosis.

Chronic endometritis [AUB-E]

- ✪ Histological diagnosis by findings of plasma cells in the endometrial stroma.
- ✪ Causes – Chlamydia, tuberculosis, mycoplasma, IUCD induced, foreign body induced, radiation exposure.
- ✪ Varied, presentations inter menstural bleeding, post coital bleedings, and menorrhagia
- ✪ Clinical presentation is normal except for the pain on motion of cervix, uterine tenderness and chronic pelvic pain

- ✪ Direct and indirect causes inflammatory cells release proteolytic enzymes that damage subepithelial capillary plexus and surface epithelium rendering fragile and prone to erosions.

Genital Tuberculosis : Female genital tuberculosis first described by Morgagni in 1744 on autopsy of young lady. Incidence 1-197 (Varies from place to place). All India Institute of medical sciences 16 % prevalence, 42.5 % present with infertility.

Mycobacterium Tuberculosis is usually secondary to pulmonary tuberculosis, primary site of primary genital tuberculosis is cervix and vulva spread by direct, hematogenous and lymphatic route. It involves fallopian tubes 90-100 %, endometrium 50-80 %, ovaries 20-30 %, cervix 5-15 %, rarely vulva and vagina 1 %. Apart from fever with night sweats Anorexia, weight loss, poor general conditions. Menstural disturbances like menorrhagia, puberty, menorrhagia, amenorrhoea, PMB, hypo and oligomenorrhoea, lump abdomen, ascitis, pleural effusion, acute pain abdomen, abnormal vaginal discharge.

Diagnosis

1. CBC — Non specific

2. Chest x-ray — Confirm, coexisting respirator y TB

3. Mantoux — 55 % sensitivity, 80 % specificity

4. Serological test – monoclonal, antibody based ELISA by sandwitch technique.

5. Endometrial biopsy - TB endometritis diagnosed 13.6 % mostly diagnosed by presence of focal, collection of lymphocytes with or without presence of dilated glands and destruction of epithelium.

6. Mycobacterium, smear and culture diagnosed by Lowenstein Jenson medium 51 % and Guinea pig inoculation 11 %.

7. PCR : Rapid sensitive and specific molecular biological method detection rate 11-50 %. PCR targets 65 KDA proteins encoding gene IS 6110 element and mpt 64 gene.

8. Imaging Studies

   Use bilateral solid masses with scattered genital tubercles in chronic genital tuberculosis.

9. CA125 Levels are nonspecific.

10. Hystero-salphingography, laproscopy, showing blocked fallopian tubes, peritonitis, periovarian adhesions. Bowel adhesions, fitz-hugh cutis syndrome.

Sudherland, tuberculosis patients shows 10/1000 patients had AUB

Roy et al., shows AUB in 246 patients occurring in 15-60 years

Age distribution

Shaefer et al., 80-90 % Between 20-40 years

Sudherland et al., 704 patients at 20 years

In India 68-89 % Between 20-30 years

Sl. No.	Particulars	No. of Patient	< 20	20-30 years	30-40 years	> 40 years
1	Gupta et al.	47	13	68	19	0
2	Devi	144	12	70	4	0
3	Hafez and Tandon	120	33	89	6	1 %
4	Chhabra et al.	57	17	74.2	5.6	1.55
5	Rattan et al.,	50	0	76	24	0

Sl. No.	Particulars	No. of Patients	Culture + ve	HPE +ve	Both
1	Chhabra et al.,	150	6	6.1	1.3
2	Star et al.,	118	7	46	NA
3	Roy et al.,	800	10.9	9.8	11.8
4	Gupta et al.,	40	2.5	2.5	2.5

Incidence of Tuberculosis by Laparoscopy

Sl. No.	Particulars	No. of Cases	No. of TB confirmed by Laparoscopy
1	Krishna et al.,	697	10.3
2	Deshmuk et al.,	500	9
3	Merchat et al.,	687	14.1
4	Gupta et al.,	150	26.7

Sl. No.	Particulars		
1	Shafer et al.,	TB Endometrium	50-80 %
2	Norgales Ortiz et al.,	TB Endometrium	60-70 %
3	Oosthuian et al.,	TB Endometrium	16 %
4	Bazoz Mallika et al.,	TB Endometrium	Demonstrate discrete granulomas
5	Booma Williams		Focal collection of Lymphocyte in endometrium

Iatrogenic Causes of AuB

Drug induced mostly steroids, progesterone, pure estrogen, depot injections, progesterone only pill, combined pill, TCA, SSI. Drugs used with enzymatic stimulants such as cimetidine, ranitidine, rifampicin, griseofulvin and smokers. Anticoagulants warfarin, heparin not included. It is included in [AuB-C]

Estrogen withdrawal bleeding

1. Bleeding following bilateral oophorectomy

2. Breakthrough bleeding with estrogen only pills

Estrogen break through bleeding

1. Relatively low levels of chronic estrogen typically result in intermittent spotting or staining that is generally light in volume.

2. Relatively high levels of chronic estrogen typically result in long period of amenorrhoea followed by profuse periods of varying durations.

Progesterone withdrawal bleeding - Similar to normal menstruation

Progesterone Breakthrough Bleeding (BTB)

More common whether estrogen progesterone ratio is very high, unscheduled bleeding is used, erratic use of transdermal patches, vaginal rings.

Levonorgesterol– Intra uterine system – spotting is more common in 3-6 months. In a UK study lot of new uses ceased by the end of the first year because of bleeding complaints. In Brazilian study 25 % complaints of vaginal suppository in first 6 months of usage. Systemic causes of agents that interfere with dopamine metabolism have the potential to cause AUB secondary to disorders of ovulation. Tricyclic Antidepressants and Phenothiazines belong to group of drugs that impact dopamine metabolism by reducing serotonin uptake. It is thought that the resulting reduced inhibitors of prolactin release causes prolactin related disruption is the HPO axis.

Ovulatory Dysfunction

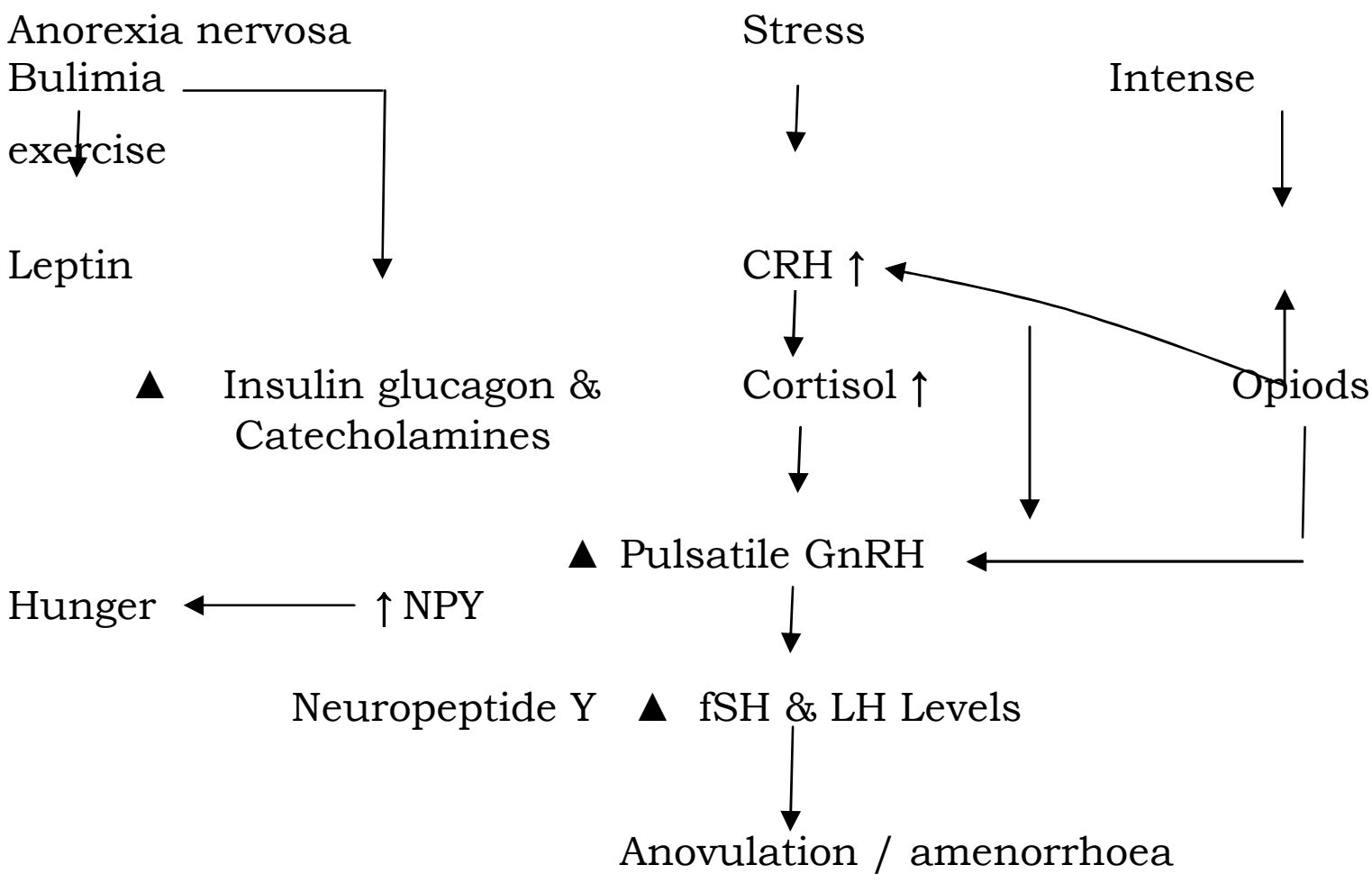
Endocrine abnormalities like hypothyroidism, hyperthyroidism, eating disorders like bulimea nervosa and anorexia nervosa. Exercise induce amenorrhoea, severe stress induced anovulation.

Eating Disorders

Hypothalamic dysfunction is severe in anorexia and may affect the HPO axis in addition to reproductive axis.

Exercise induced anovulation – notable variation in anovulation cyclic interval, length due to reduced hormonal function and shortened luteal cycles. There is a definite correlation between body fat and reproductive function. (Billewicz, 1976, Johnson 1975, Abraham 1982).

Stress induced anovulation increase in CRH causes variable pulsatile release of GNRH.



PCOS

Incidence 4-12 % causes of ovulation dysfunction.

ESHRE / ASRM (Rotterdom 2003)

To include two out of the three

1. chronic-oligo / anovulation
2. Clinical and biochemical signs and symptoms of hyper androgenemia polycystic ovaries with exclusion of related hyper androgenic disorders

AE – PCOs (2009)

1. Hyper androgenism hirsutisim and hyper androgenemia
2. Oligo / anovulation (PCOs)
3. Exclusion of other androgen related disorders

Variable range of menstrual irregularities from amenorrhoea to menorrhagia

Treatment

Observation : Fairly regular cycles 6-8 cycles per year with mild hyperandrogenism should be periodically screened for dyslipidemias and diabetes mellitus.

Weight loss, exercise, dietary modification and regularisation of cycles with OC pills.

Insulin Sensitizing agents like metformin not FDA approved category B drug can be used for ovulation induction. It reduces androgen level in lean and obese PCOS (Batukon 2001, Essan 2006, Hass 2003). Hirsutism and acne are managed symptomatically.

Thyroid Disorders

Thyroid hormones and thyroid stimulating hormones produce varying ranges of menstrual problems because of molecular mimicracy of TSH and LH and FSH according to Spill over theory.

Common Causes of Hypothyroidism are

1. Primary autoimmune Hypothyroidism, Hashimoto's thyroiditis, atrophic thyroiditis
2. Iatrogenic – subtotal thyroidectomy, external irradiation
3. Drug induced – Lithium, amiodarone
4. Congenital disorders
5. Infiltrative disorders, amyloidosis, sarcoidosis, hemochromatosis, scleroderma, cystinosis, riedel's thyroiditis.

Common causes of Hyperthyroidism are

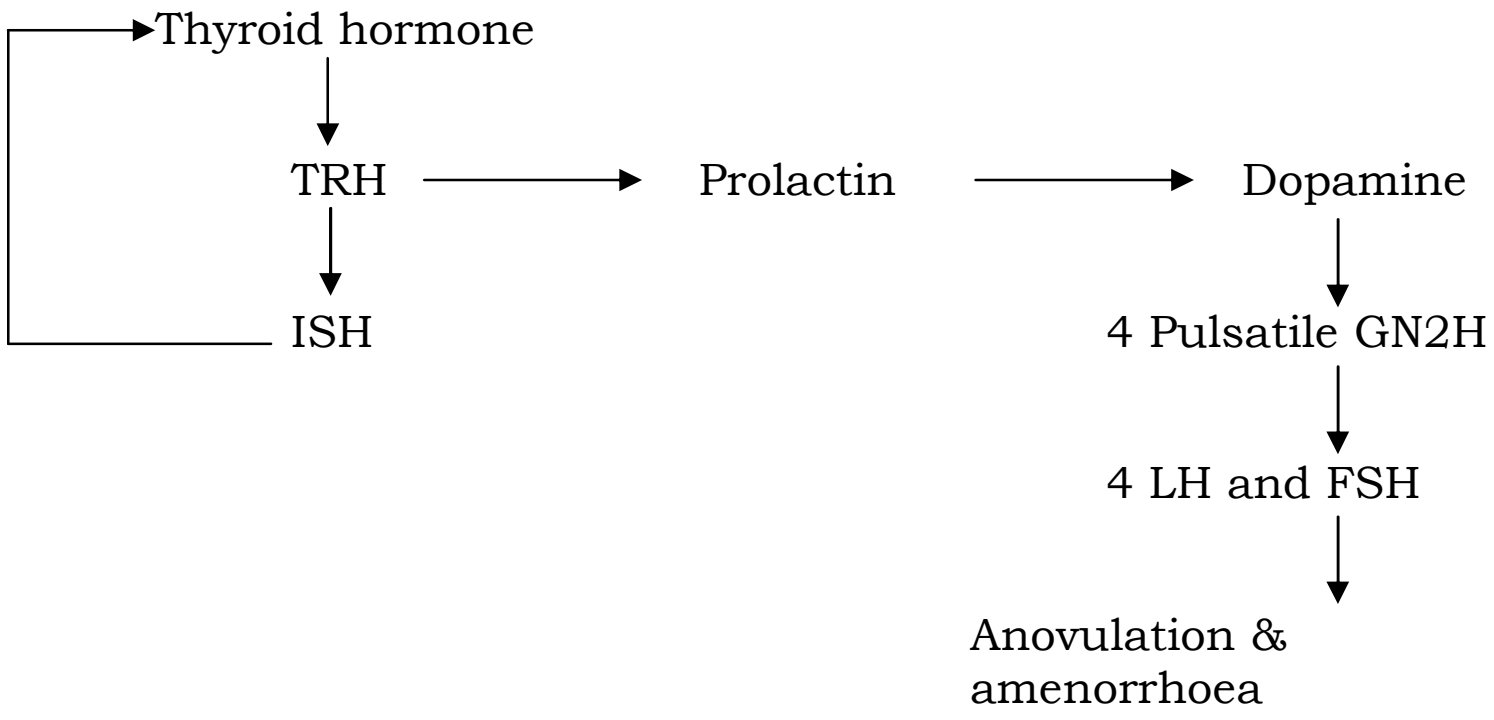
1. Primary Hyperthyroidism – graves disease, toxic nodular goiter, toxic adenoma, silent subacute thyroiditis, ingestion of excess hormone, thyroid hormone secreting tumours.

Coagulation and fibrinolytic abnormalities associated with thyroid dysfunction as per J Clin Endocrinol Metab, 2007

General Hemostatic tests	Hypo	Hyper	Sub.Hypo	Sub.Hyper
General hemostatic tests	↑	↓	=	
Bleeding time	↑		=	
aPTT	↑		=	
PT	↑		=	
Clotting time	↑			
Prothrombin fragment 1-2		=		

Hypothyroidism and Hyperprolactinemia

Classically hypothyroidism causes amenorrhoea, hyperthyroiditis causes menorrhagia.



Varied response

TRH increases, TSH by pituitary gland, lactotropes, increasing, prolactin secretors. A circulating increases in prolactin results is a

compensatory increase in central dopamine the primary inhibitor of prolactin secreted.

Increasing central dopamine levels alters GnRH secretion thereby disrupting normal cycle gonadotropic secretor and preventing ovulation.

- ✪ Poorly understood results thyroid receptors are found as most cases.
- ✪ Increases sex hormone binding globulin levels.
- ✪ Altered levels of unbound active sex steroids
- ✪ Prolactin receptors are found in endometrium and ovary.

Correction of hypothyroidism correct hyper prolactinemia if the symptoms persist needs for the evaluation.

- ✪ Both hyperthyroidism and hypothyroidism menstrual disorders amenorrhoea to menorrhagia [Koutras 1997].
- ✪ Thyroid dysfunctions – menstrual abnormalities antedate other clinical findings [Joshi 1993].
- ✪ Hyperthyrodism causes amenorrhoea, hypomenorrhoea, menorrhagia 5 %
- ✪ Treating unduly and hypothyroidism usually corrects bleeding dysfunction [Krarsar 1999, Wilansky 1989].

Investigations

1. In true anovulatory bleeding the menstrual history alone can establish the diagnosis with sufficient confidence that treatment can begin without additional lab investigations

1.	Complete		Blood count
	Hb%		RBC in million
	PCV, ESR		Platelet count
2.	Bleeding time	-	Evaluating platelet function
	Clotting time	-	Clotting factor
3.	Prothrombin time	-	Extrinsic and final common pathway factor
4.	APTT	-	Activated Partial thromboplastin Involves Intrinsic and final common pathway factors.

Investigations of coagulation profile (Level II)

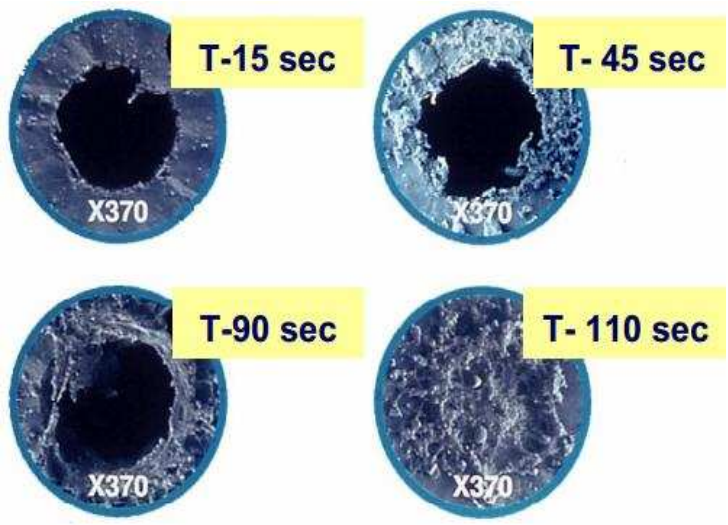
PT and aPTT – Low positive and high negative predictive value.

Von Willebrand factor, ristocetin cofactor activity.

Factor VIII levels, Blood grouping, typing

PTA – Platelet function analyser is having 100 % sensitivity and specificity and is less invasive.

Closure Time PFA 100



Liver function tests – all clotting factors are synthesized in Liver.

Renal function tests- erythropoietin of kidney is the one of the stimulants for erythropoiesis.

Ultrasonogram – Diagnosis of structural cases, polyp myohyperplasia.

If uterus is enlarged 10-12 weeks USG is definite. [Recommendations Level II]

X-ray chest PA view - Respiratory tuberculosis

Mantoux - For tuberculosis less sensitive

Cervical culture for Gonococcal / Chlamydia/tuberculosis

Endocrine causes

Fasting prolactin levels

Thyroid function tests – TSH free T3, T4

If cycles are regular D3 measurement LH, FSH estradiol.

Decrease FSH are consistent with secondary ovarian dysfunctions because of pituitary and hypothalamus causes.

Increase FSH and LH ratio; Serum estradiol – Low because of decreased ovarian reserve or primary ovarian failure.

High LH and FSH ratio with secondary sexual characteristics at an unusually young age. - Precocious puberty.

LH/FSH ratio >2:1 or 3:1 diagnostic of PCOs. FSH results can decrease with oral contraceptives.

Androgen excess can be demonstrated by measuring total and free testosterone levels. An elevated free testosterone level is an indicator of androgen excess. Endocrine investigations are unnecessary, unless there is clinical – suspicious of thyroid diseases / premature ovarian failure (Level II).

Evaluation of Endometrium

RCOG current guidelines to TVS should be for initial investigation with hysteroscopy, backup (LEVEL Ib).

ACOG practice Bulletin No.14[2]

There is distinct increase in the incidence of endometrial carcinoma from 30-34 years.AS ON 2.3/19000 in 1995 to age 34-39 (6.1/100000). Age > 35 needs endometrial evaluation. Women < 35 who have sufficient risk factors, morbid obesity, PCOs, needs evaluation Storall's study, pipelle's endometrial sampling says 97.5 % of endometrial surface in AUB cases. Guido colleagues study says 97 % Causes are evaluated.The possible explanation is of limited usage. Pipelle endometrial sampling samples 5 % surface areas.

Saline sonohysteroscopy (Level IB evidence)

Office – Hysteroscopy for better diagnostic accuracy of their diagnosis of structural causes. Timing of sono hysteroscopy. Women et al., sap. False positive rate 17 % done on Day 16 – Day 28. In patients with irregular periods of an empirical course of progesterone long day 10-14 days as a medical curretage and time the ultrasound. Evaluations to the withdrawal bleed may be appropriate MRI. Differentiating size, number locations of fibroids extending into cavity and carcinomatous changes. Dilatation and curretage has no advantage over clinic based techniques (Level Ib) evidence.

Endometrial, histology, anovulatory cycles and chronic endometritis. Endometrial culture – modified petroff method by Lowenstein jensons medium.

Therapy

Pharmacological therapy and Surgical therapy

Pharmacological Therapy

Anti fibrinolytic agents	Tranexemic acid
Anti prostaglandins	mefenemic acid
Hormonal therapy	Norethisterone, intra uterine, progestagens, OC pills, Danazol, GNRH analogues, gestrinone, tamoxifen

1. **Antifibrinolytics – TDA approved – Tranexemic acid**

   Reversibly blocking lysine binding sites of plasminogen.

   Preventing, plasmin and fibrin polymer interlocking. Resulting in fibrin degradations, stabilizing clots, reducing bleeding.

   Tranexamic acid is cautiously used in thrombembolism. TA is used in BMB is DMPA. IUCD induced menorrhagia. TDA has approved 1300 mg. 3 times a day for 5 days, oral availability of 35 %.

2. Anti Prostaglandins – mefenemic acid decrease – endometrial prostagladins cox inhibitor – decreased blood loss by 25 %

including symptoms of dysmenorrhoea, headache, nausea, diarrhoea, depression.

Medical Treatment

NSAIDS in menorrhagia (nakarainen 1986 b, Marchini 1995)

Conventional NSAIDS non specifically inhibit COX ENZYMES CO X inhibitors is associated with both results but not proven now (Hayer, 2002).

COX inhibitior usage also causes increased myocardial infarction stroke and heart failure. (Solmon 2005).

Oral Progestogen

Progestine halt endometrial growth and allows an organized sloughing with their withdrawal (Sarrikoski, 1990).

Hormonal Therapy

Systemic progesterone and medroxy progesterone in an-ovulatory bleeding.

ACOG guidelines

First line management combined OCpills

Levonorgesterol IUD – 2nd choice

Combined OCpills

To Correct menstrual irregularities and correct anovulation reduces blood loss by 80 % extended release cycle tablets or continuous OCpills 20 µg ethinyl estradiol and 100 µg Levonorgesterol either 84/7 shortens hormone free interval (Level 1b) evidence.

Levonorgesterol reduces by blood loss in 74-97 % (Singh 2005, Steward 2007)

Dilatation curettage rarely used for treatment because its effect are temporary. D/C is used to arrest refractive bleeding To high dose estrogen. (ACOG 2000, Stabinsky and Associate, 1999).

Extended cycle OCpills usage or depot medroxy progesterone are the causes of menorrhagia according toACOG 2009b.

Danozol

Synthetic antiandrogenic with antiestrogenic and anti progesterogenic activity. It inhibits the release of pitutary

gonadotropins direct suppressive effect on endometrium. It is used as an preop adjuvant management .

Gestrinone / Tamoxifen

Control blood loss by pituitary down regulation and subsequent reduction in the cyclic ovarian activity.

Management of Coagulation Abnormalities

1 **Tranexemic acid** shepherd randomized trials approves 54 % reduction in blood loss.

2. **Combined OCpills** Inhibit endometrial growth as well as increasing fVIIIC and VWF.AC levels. As per Foster et al., standard dose of OCpills provides 24 % reduction in blood loss in most women .

3. **DDAVP (Desmopressin Nasal Spray** it causes thrombocytopenia.

Levonorgesterol IUCD – 20 µg L Levonorgesterol eluting in every 24 hours lasting for 5 years. Main problem is high discontinuation rate 20 % (Stewart et al.,) and no effect on fVIII levels.

LNS (IUS) more effective in the management with statistically significant less treatment failure (11 % to 36 %)

Cochrane Review

Cyclical progesterone from day 15 to day 26 offers no advantage over other drugs.

Instead 21 day progesterone therapy taken from day 5 to day 26 should be recommended because it causes significant blood loss (Level 1B evidence).

Medical Treatment

NSAIDS in menorrhagia (nakarainen 1986 b, Marchini 1995)

Conventional NSAIDS non specifically inhibit both cyclooxygenase Cox_2

COx_2 inhibitors is associated with both results but not proven neither (Hayer, 2002).

COx_2 inhibition usage also causes increased mycordial infact stroke and heart failure. (Solmon 2005).

Oral Progestogens

Progestine halts endometrial growth and allows an organize of sloughing with their withdrawal (Sarrikoski, 1990).

Ovulatory menorrhagia is relatively on unresponsive to cyclic administration of progestines (Cameron 1987, 1990, Preston 1995, Singh 2005).

Prolonged use of high dose progestins is often associated with side effect such as mood changes, weight gain, bloating, headaches, atherogenic changes in lipid profile (Lethaby 1998b).

Combined OCpills – hormonal contraceptives are effective. It causes diminished prostaglandin synthesis and decreased endometrial fibrinolysis (Irvine 1999).

Androgen

Menstrual loss is reduced into half. It may induce amenorrhoea (Beumount 2002, Chimbra 1980, Higham 1993).

In The heavy menstrual bleeding suggested dosing of 100-200 mg taken orally everyday (Chimbra 1980b).

The drug is reserved as a second line of choice prior to surgery. (Banger 2004).

Von Willebrand Disease

Dilatation and curettage worsens Von Willebrand's disease (James 2009a). Hysterectomy is curative in VWD. Consultation with haemotologists with perioperative desmopressin and factor concentrate administration according to ACOG 9b.

Surgical Methods

Endometrial ablation

Minimal invasive surgical methods currently 5 FDA approved for the management of abnormal uterine bleeding .

MEAS (Microwave Endometrial Abalation System) Novasure, Thermochoice, Heroption, hydrothermablator (Level II evidence)

Criteria for management Maximum uterine length by sounding of 10 cms except MEAS which is 14 cms. Novausre, MEAS, thermochoice licensed for abalation of uterine cavity with less than 3 cm fibroid. Absolute contra indication of procedure are malignancy infection, uterine perforation. Endometrial ablative procedure (ACOG 2007) recommends endometrial sampling before endometrial ablation.

SAFETY and EFFICACY REGISTRAR of NEW INTERVENTIONAL PROCEDURE (SERNIP A, B, C1C2, D)

Only MEAS and Thermochoice are certified in category B

Long term satisfaction in patients is high with hystrectomy but associated with morbidity and mortality should be offered also safe alternative wuth (Level IV evidence). Laproscopic AVH is more expensive than the abdominal hysterectomy and carries less complication in experienced hands as per (Level 1B evidence)

AIM OF THE STUDY

AIM OF THE STUDY

1. To conduct in depth analysis of non structural causes of abnormal uterine bleeding

2. To find the incidence of non structural causes of AUB with special emphasis on careful history taking and clinical examination and inclusion of simple test to diagnose hemostatic disorders.

3. To find out relations between age and symptoms

4. To find out the MORBIDITY PARAMETERS OF of non structural causes of AUB

MATERIALS AND METHODS

MATERIALS AND METHODS

This is a prospective study conducted in Mahatma Gandhi Memorial Hospital, Trichy during period of June 2011-May 2012.

INCLUSION CRITERIA

- Age between 13-55 yrs
- With clinical sign and symptoms of AUB.

EXCLUSION CRITERIA

- Ultra sonically diagnosed structural causes of AUB from the patients with age of 13-55 yrs

METHODS

1. History
2. Clinical assessment
3. Complete blood count
4. Hb% by sahli hemoglobinometer normal value is 11-14gms%
5. Packed cell volume -28-32%
6. TC DC P L E
7. RBC VALUE IN – 5-6 millions/cumm
8. PERIPHERAL SMEAR – leishman stain and geimsa stain by oil immersion method [for 10 hpf]
9. RBC VALUE IN – 5-6 millions /cu mm

10. Thyroid function test – TSH-.44-.345 MIU /ML T-3 LEVELS-.49-2.02NG/ML T-4 VALUE MICRO GRAM/DL

11. LIVER FUNCTION TESTS – as per lab values

12. BLEEDING TIME blotting paper method -2-3 min

13. Clotting time –tube method 3-5 min

14. PROTHROMBIN TIME & ACTIVATED PARTIAL PROTHROMBIN TIME by siemens thromborel kit

17. FACTOR 8 AND 9 LEVELS AS PER KIT .

18. SPUTUM FOR ACID FAST BACILLUS by ziehl nielson technique

19. X-ray chest PA view

20. USG TO R/O Structural Causes

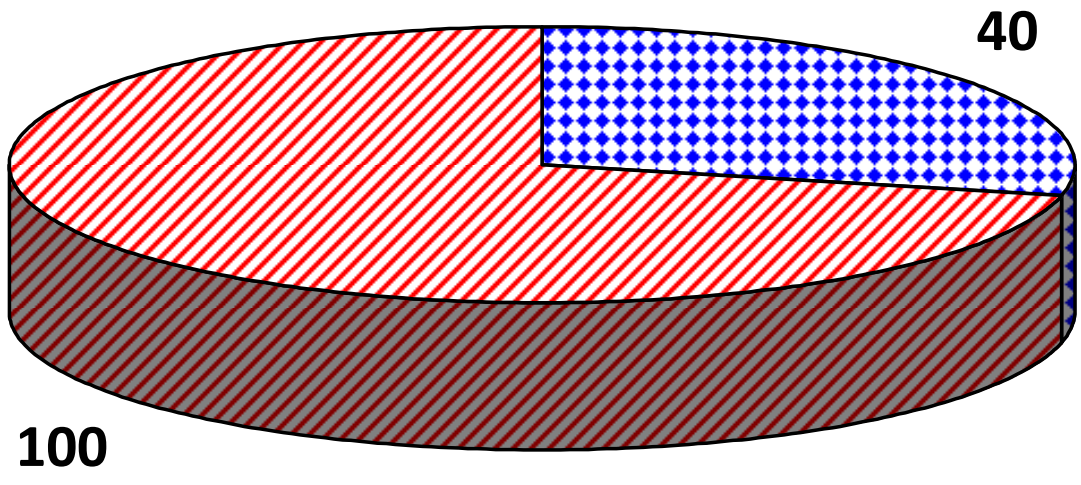
21. ENDOMETRIAL BIOPSY by pipelles endometrial currete in indicated cases.

22. Endometrial culture in possible cases in lowenstein jensen medium specimen concentrated by modified petroff method

RESULTS AND OBSERVATION

RESULTS

Pie Diagram showing Incidence of AuB



Incidence of AuB

40 % correlates with the world records.

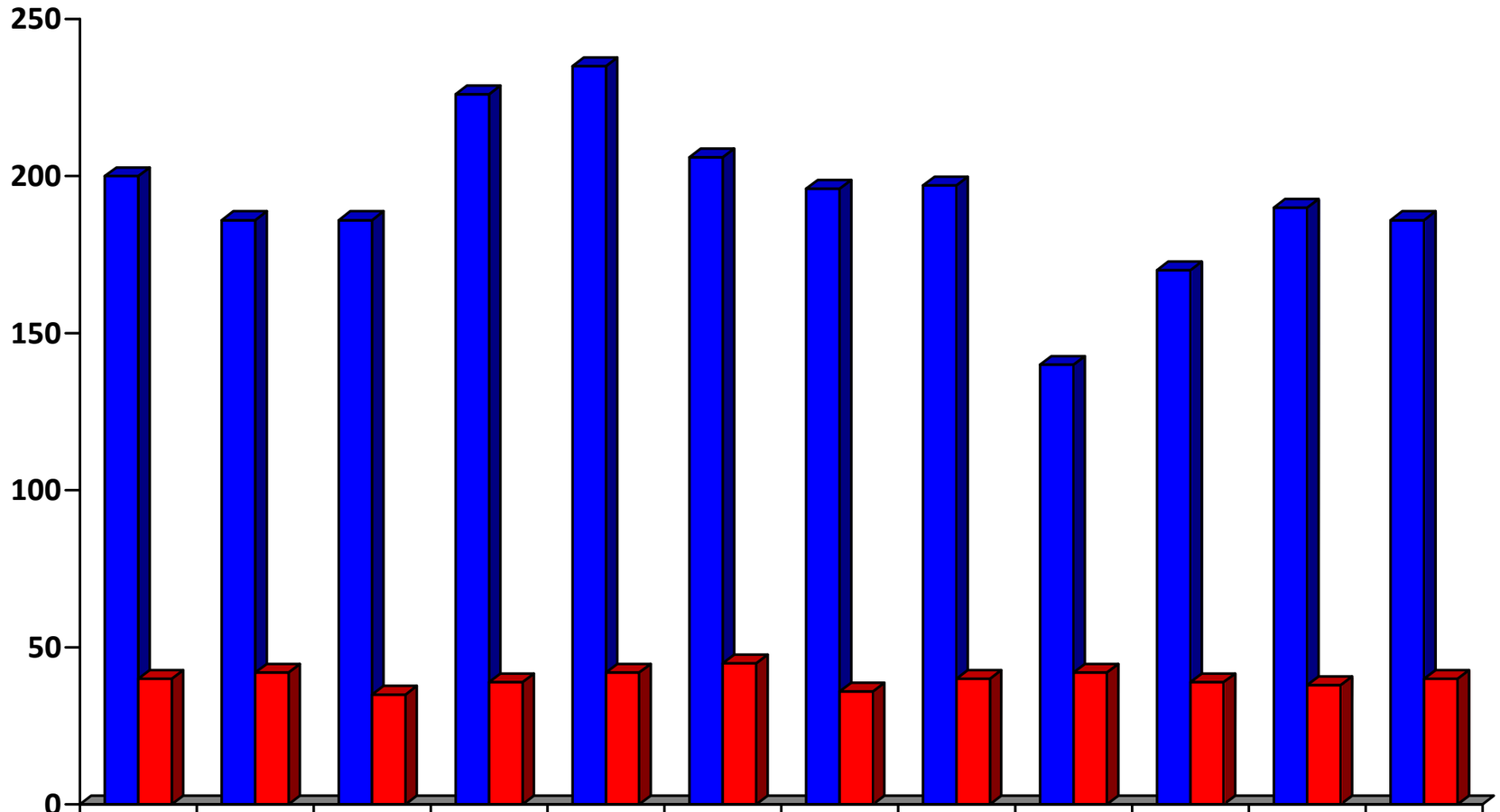
Overall incidence correlates with various records of 10 to 30 %.

RESULTS AND OBSERVATION

Incidence of AuB of 1 year

Month	2011 June	2011 July	2011 August	2011 Sep	2011 Oct	2011 Nov	2011 Dec	2012 Jan	2012 Feb	2012 Mar	2012 Apr	2012 May	Total
Total Cases	200	186	186	226	235	206	196	197	140	170	190	186	2318
Percentage	40	42	35	39	42	45	36	40	42	39	38	40	39.33

Bar Diagram showing the Incidence of AuB of 1 year



	2011 June	2011 July	2011 August	2011 Sep	2011 Oct	2011 Nov	2011 Dec	2012 Jan	2012 Feb	2012 Mar	2012 Apr	2012 May
Total Cases	200	186	186	226	235	206	196	197	140	170	190	186
Percentage	40	42	35	39	42	45	36	40	42	39	38	40

Incidence of Coagulation Disorders

Sl. No.	Description	No of Cases
1	ITP	9
2	Thrombocytopenia with Splenomegaly	7
3	Prothrombin time prolongation	3
4	Prothrombin time activated and prothrombin time prolongation	6
TOTAL		**25**

Incidence 12.5 %

Incidence by Kadir et al., 13 %

Dilley et al., 7 %

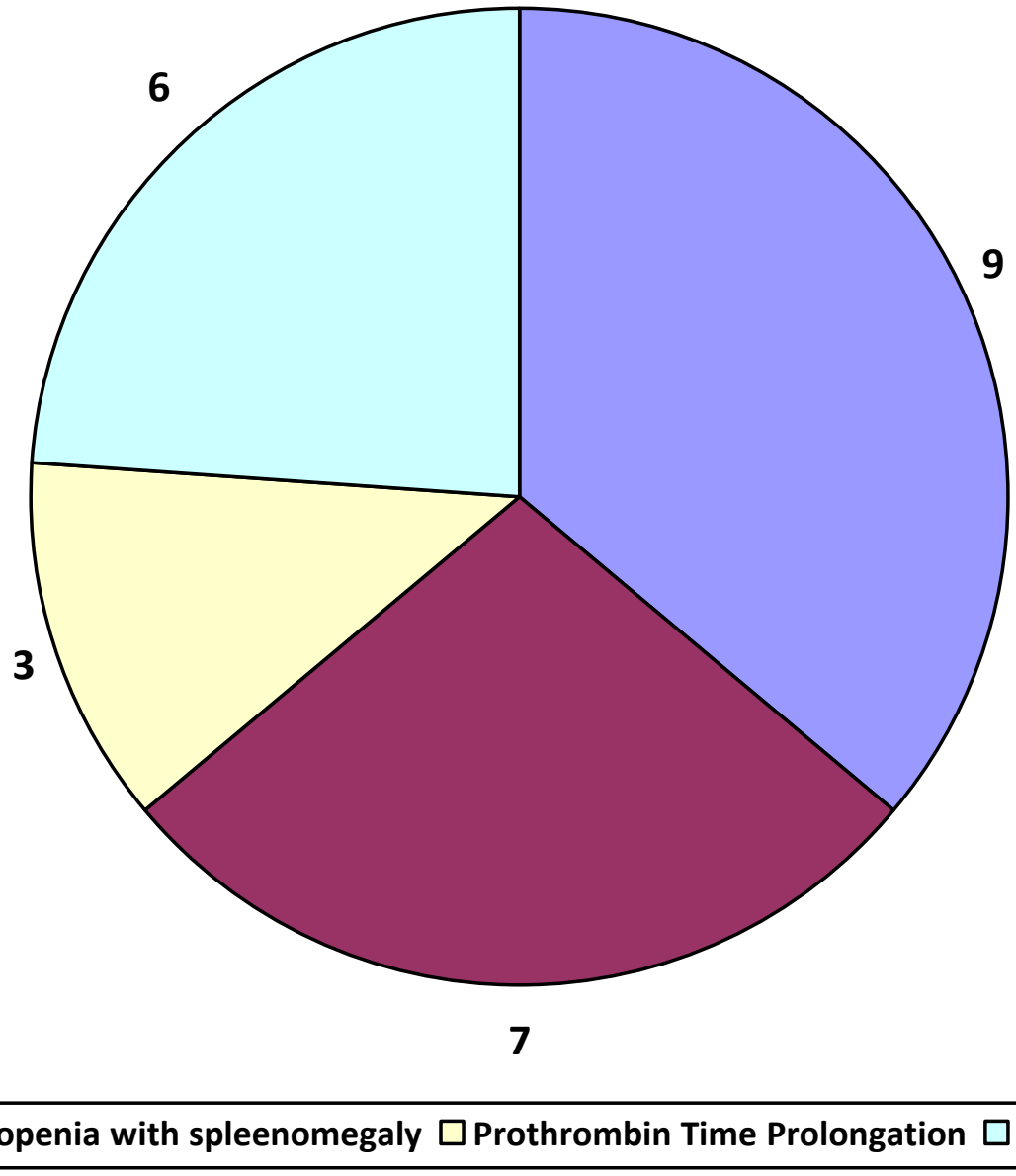
Woo et al., 13 %

Ediun et al., 20 %

My study correlates with the result.

Incidence of Coagulation disorders

Total 25 Cases : Incidence 12.5 %



AuB(E) Endometrial Causes

Sl. No.	Description	No of Cases
1	Chronic non specific endometritis	12
2	Tuberculosis endometritis culture +ve	3
3	Genital tuberculosis by ultrasound ascitis and pleural effusion	5
TOTAL		**20**

Incidence 10 %

Oosthuian et al., of TB Endometrium of 16% and

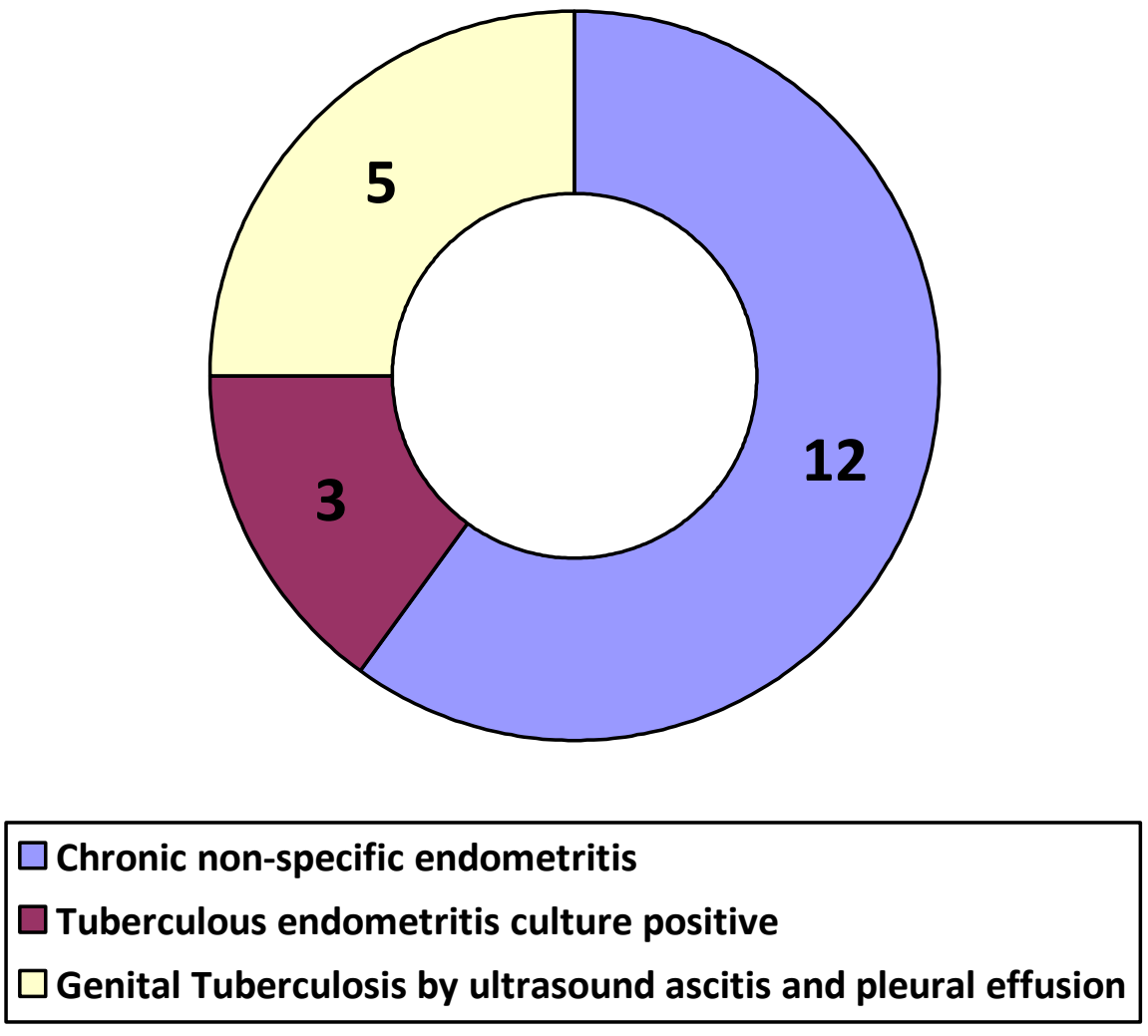
Chhabra et al., shows the incidence of TB culture +ve as 1.3 % ,

Gupta et al., shows the culture +ve of 2.5 %

coincidence with my study.

AuB(E) Endometrial Causes

Total 20 Cases : Incidence 10 %



AuB(O) Ovulatory Dysfunction

Sl. No.	Description	No of Cases
1	Subclinical hypothyroidism	5
2	Hyperthyroidism	10
3	Hypothyroidism	45
TOTAL		**60**

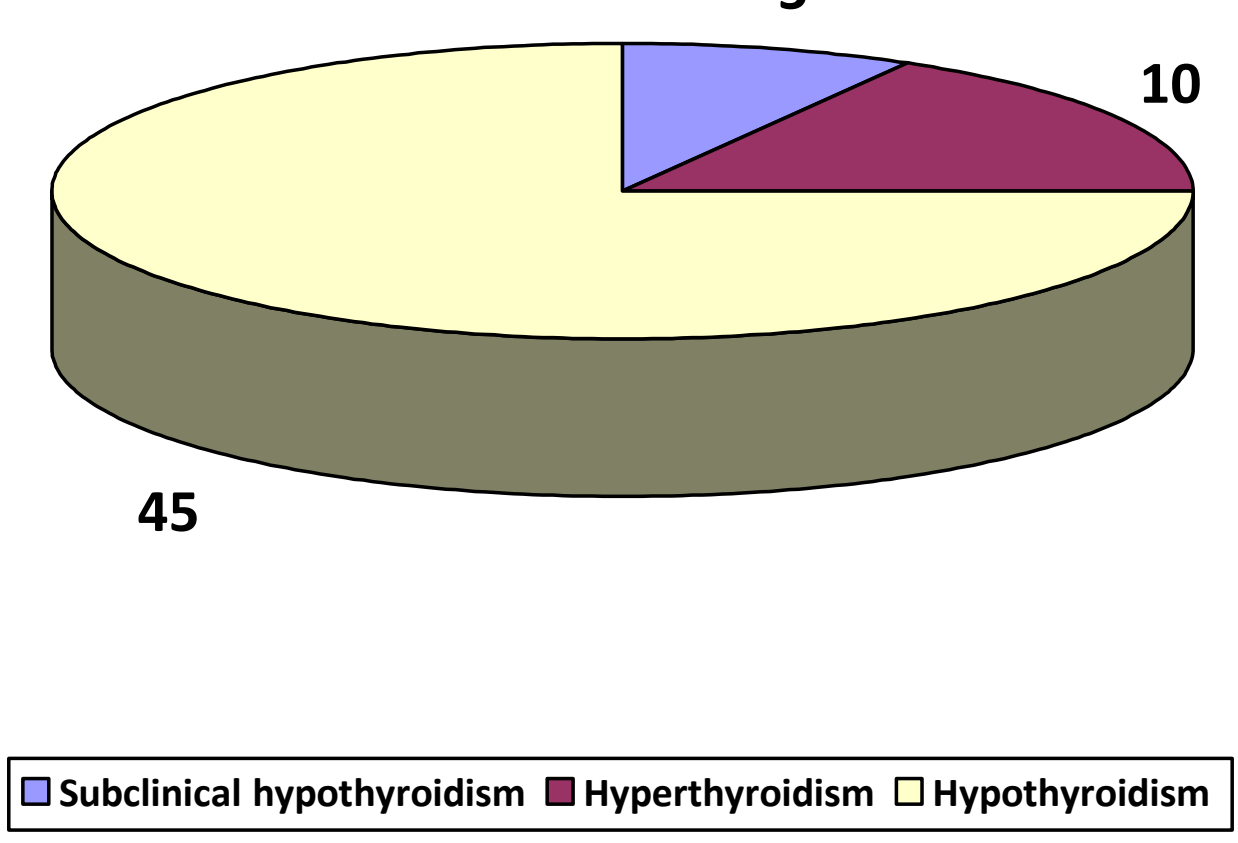
Incidence 30 %

Koutras 1997, shows an incidence of 30 – 40 % of patients with menstrual irregularities with thyroid dysfunction.

Wilansky Krasur and Josh et al., shows an average incidence of 25-50%.

AuB(O) Ovulatory Dysfunction

Total 60 Cases : Incidence 30 %

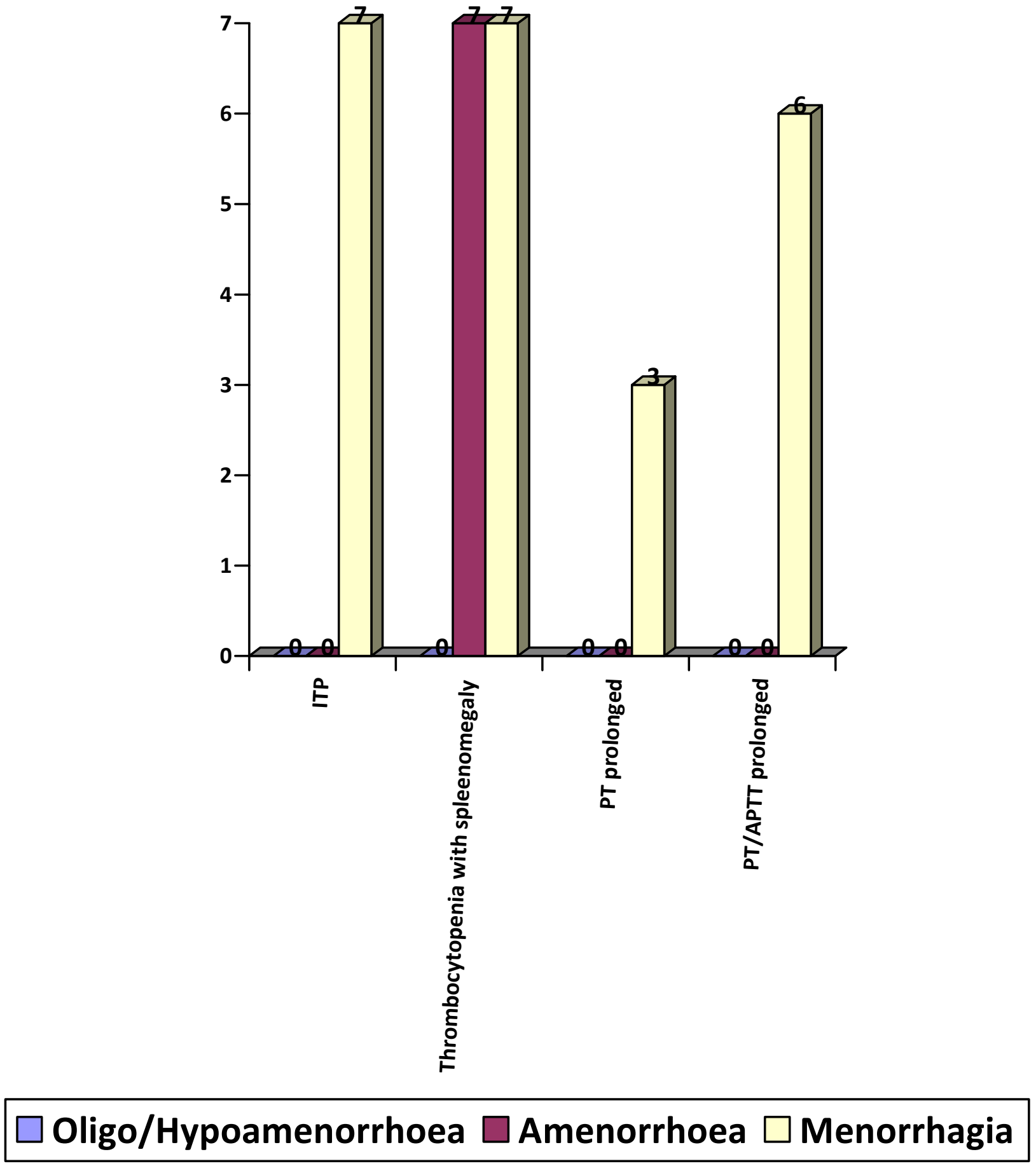


Symptoms of Coagulopathies

Sl. No.	Description	Oligo / hypo	Amenorrhoea	Menorrhagia	P value
1	ITP	0	0	7	0.011
2	Thrombocytopenia with splenomegaly	0	7	7	0.936
3	PT prolonged	0	0	3	0.781
4	PT/aPTT prolonged	0	0	6	0.053

ITP and PT/aPTT prolonged with probable coagulopathy have a significant p value with the symptoms.

Symptoms of Coagulopathies

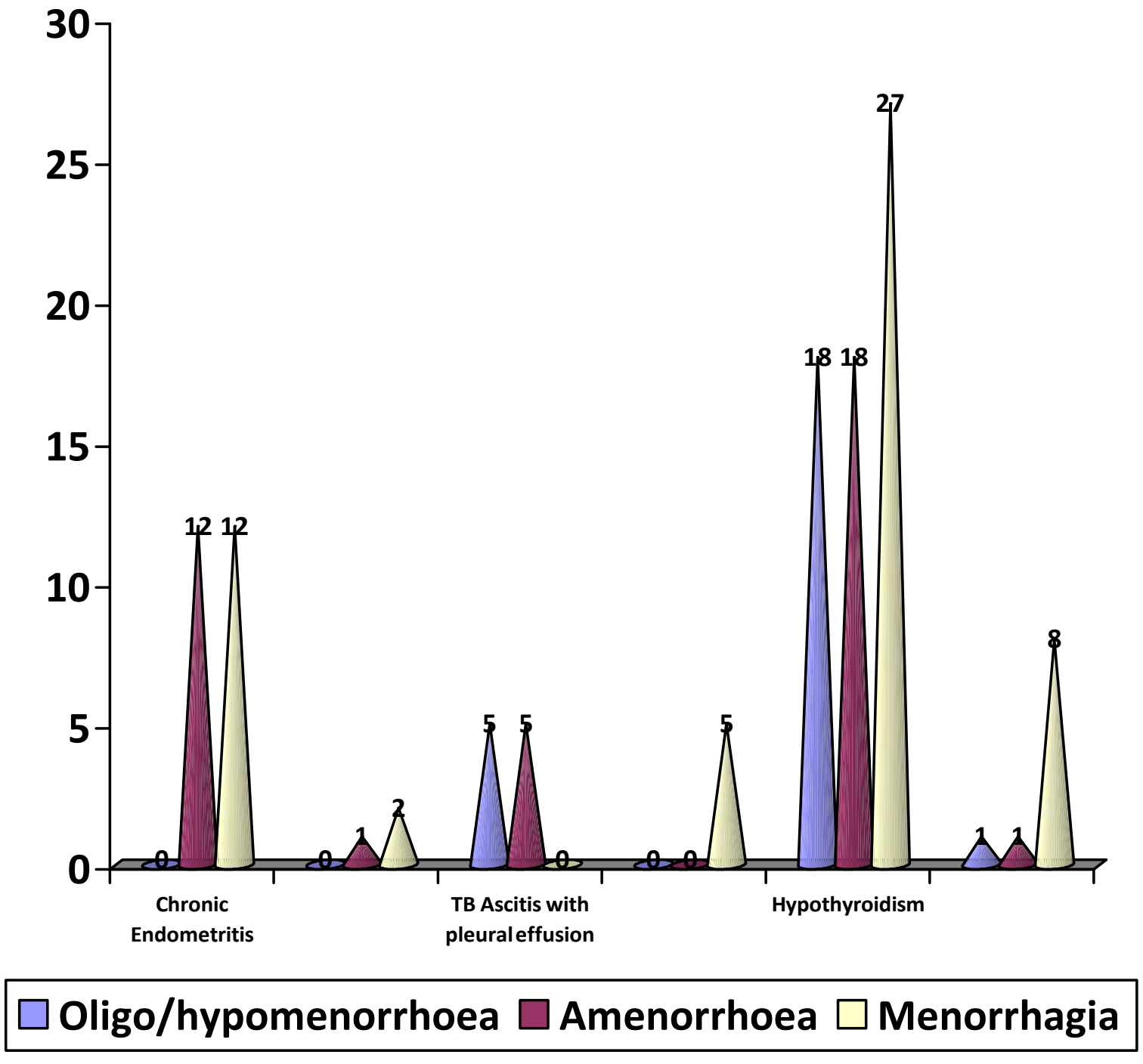


Symptoms of AUB(E) and AUB(O)

Sl. No.	Description	Oligo / hypo	Amenorrhoea	Menorrhagia	P value
1	Chronic Endometritis	0	12	12	0.487
2	TB Culture	0	1	2	0.216
3	TB Ascitis with pleural effusion	5	5	0	0.109
4	Subclinical hypothyroidism	0	0	5	0.004
5	Hypothyroidism	18	18	27	0.054
6	Hyperthyroidism	1	1	8	0.008

Subclinical hypo thyroidism and hypothyroidism have a significant p value of 0.004 and 0.054 respectively.

Symptoms of AuB(E) and AuB(O)



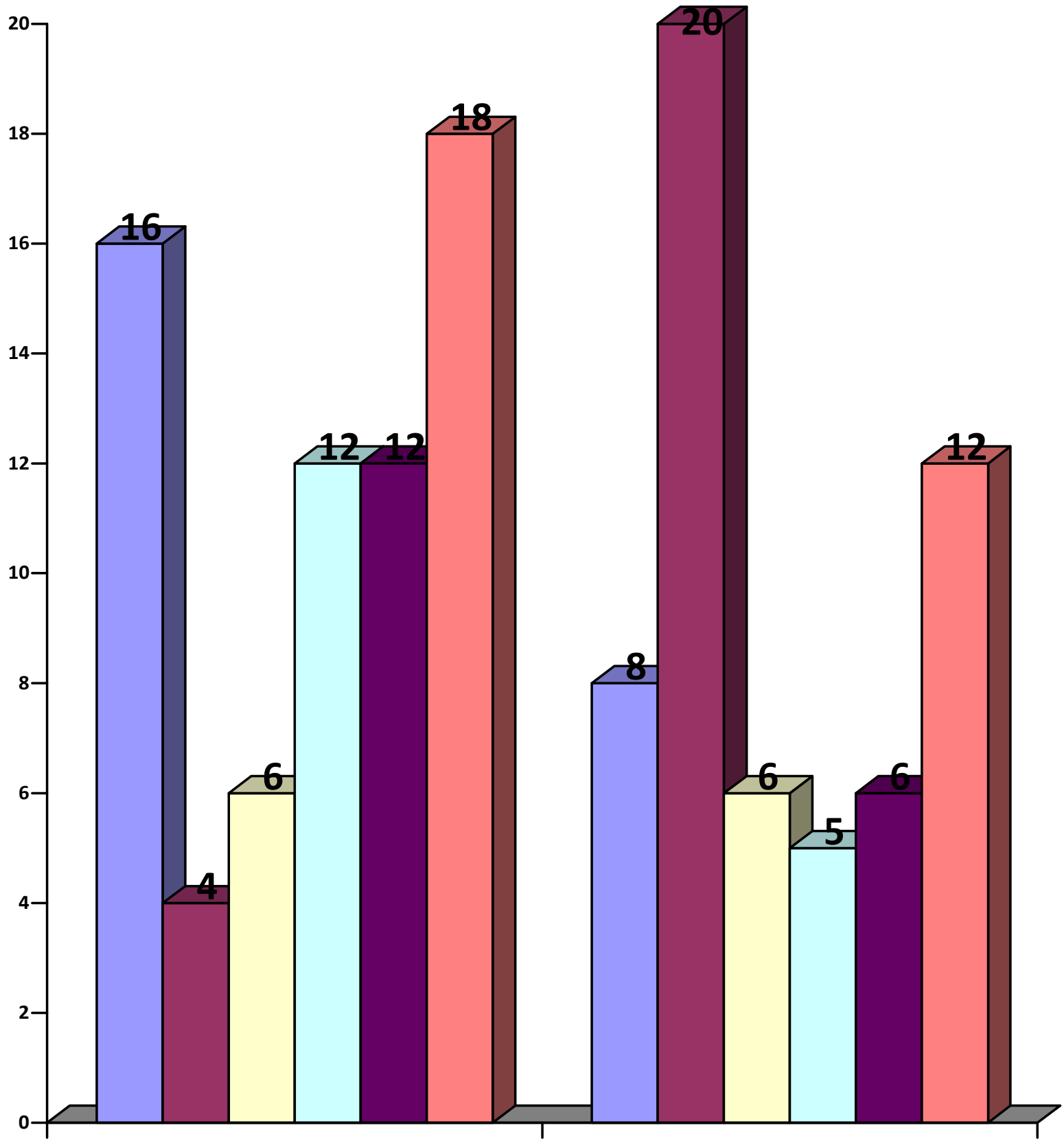
Correlative study of symptoms

	Pts with coagulation abnormality N=25	**Pts without coagulation abnormality N=80**	**P value**
Age since menarche >24 months	16 (64)	8 (10)	0.000
Since menarche < 24 months\	4 (16)	20 (25)	0.040
Family History of Bleeding disorder	6 (24)	6 (7.5)	0.480
History of Bleeding Symptoms	12 (48)	5(6.25)	0.001
Post operative bleeding	12 (48)	6 (7.5)	0.000
Postpartum bleeding	18 (72)	12(15)	0.001

Patients with symptoms since menarche more than 24 months and post operative bleeding have a highly significant p value of 0.000.

History with bleeding symptoms and postpartum bleeding have a significant p value of 0.001.

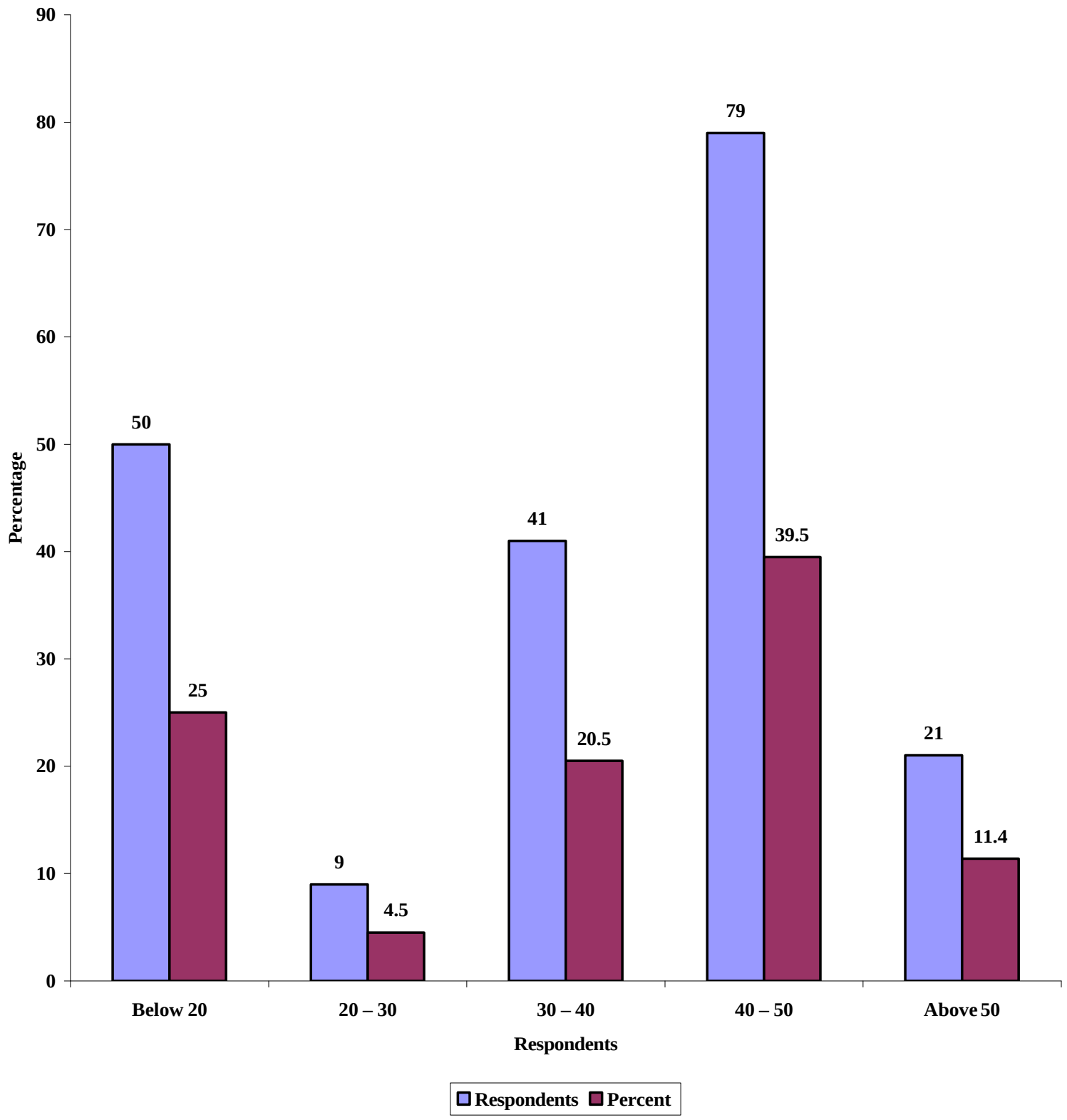
Correlative Study with Symptoms



Correlation of Age with Symptoms

	Respondents	**Percent**
Below 20	50	25.00
20 – 30	09	04.5
30 – 40	41	20.5
40 – 50	79	39.5
Above 50	21	11.4
Total	**200**	**100**

Symptoms predominates with an average age group of 40-50 accounting for 39.5 cases.

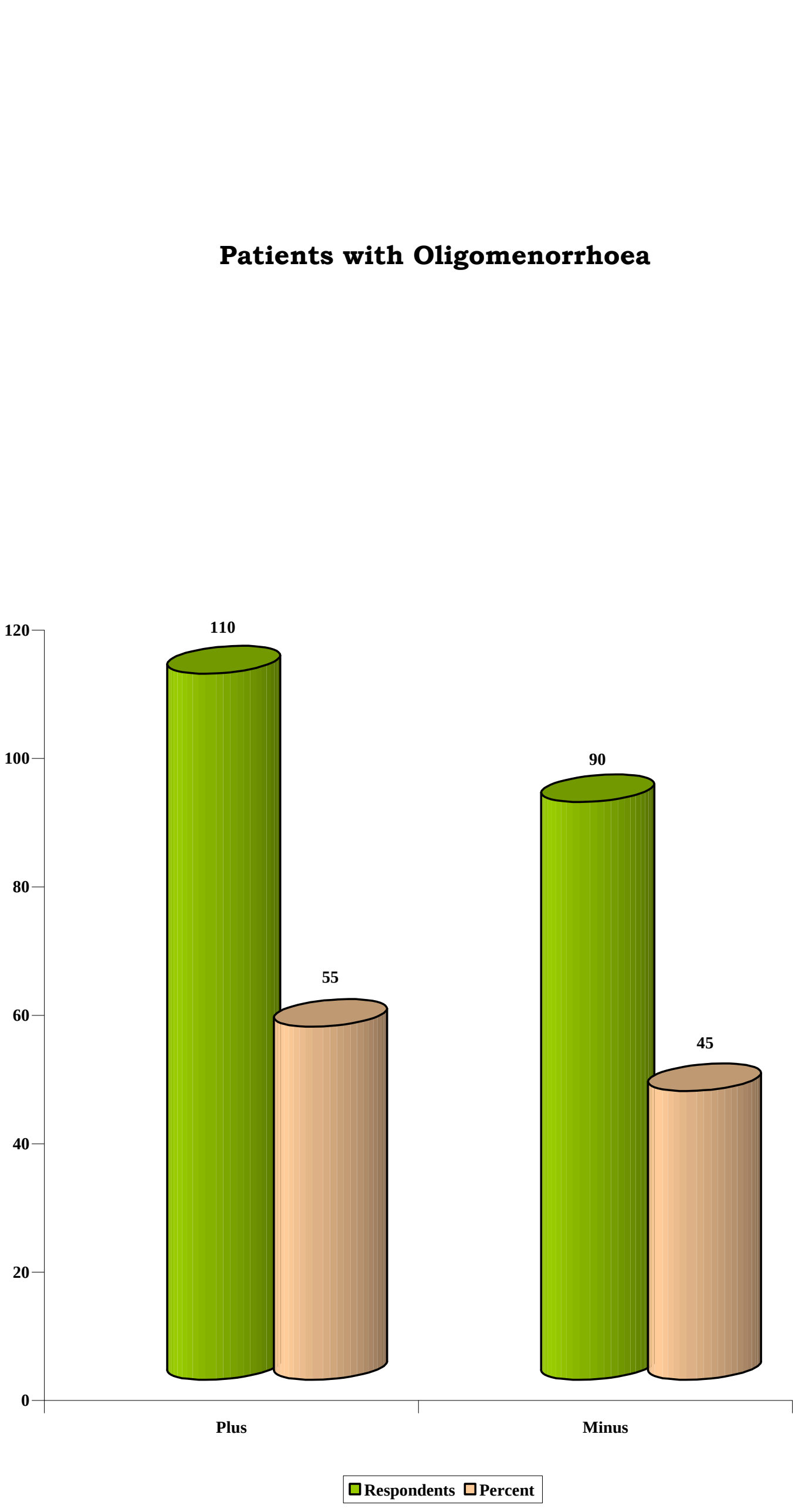

90
80
70
60
50
40
30
20
10
0
Percentage
50
25
9
4.5
41
20.5
79
39.5
21
11.4
Below 20
20 – 30
30 – 40
40 – 50
Above 50
Respondents
Respondents
Percent

Patients with Oligomenorrhoea

	Respondents	**Percent**
Plus	110	55.0
Minus	90	45.0
Total	**200**	**100.0**

Patients with oligomenorrhoea predominates accounting for 55 %.

Patients with Oligomenorrhoea

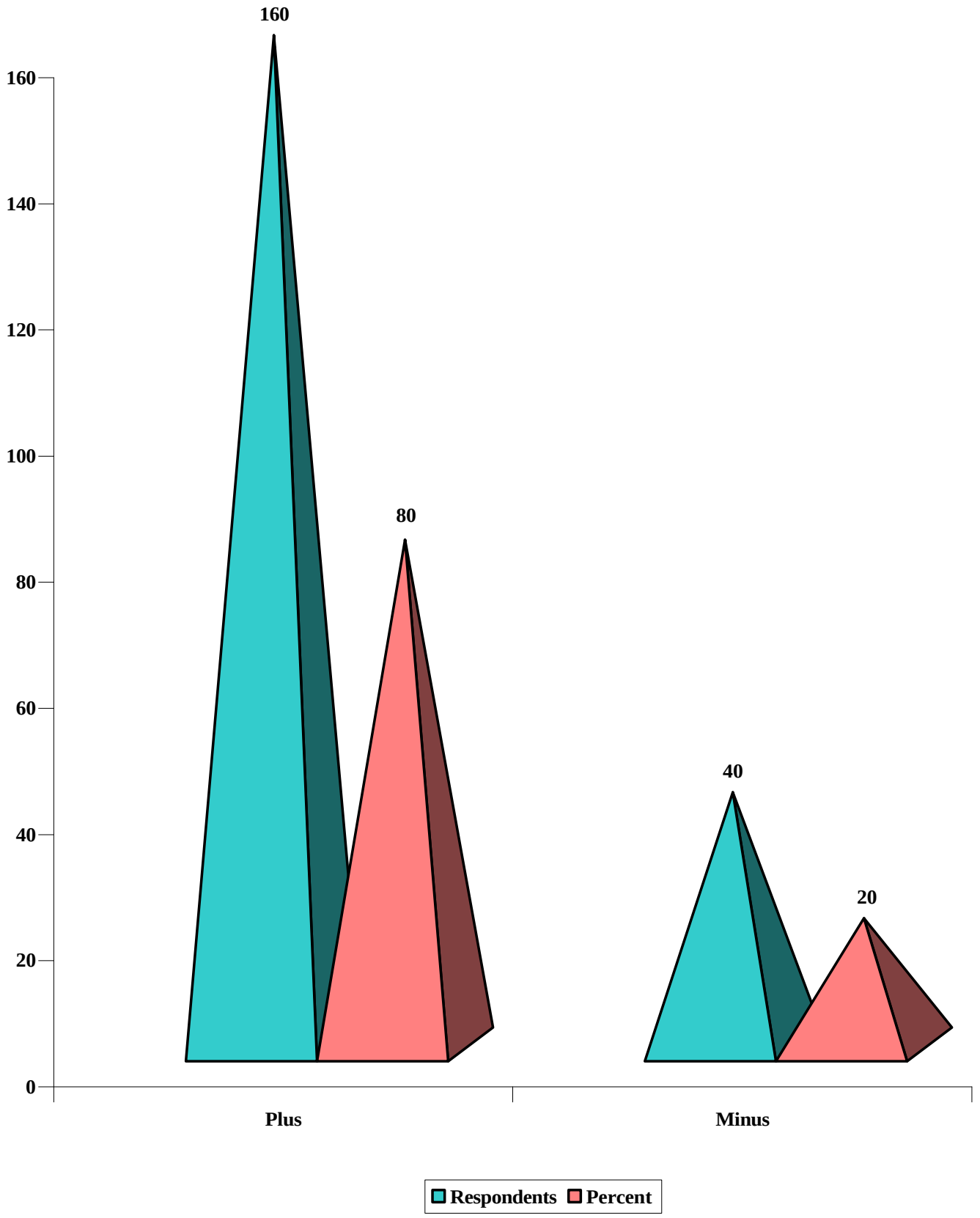


Patients with menorrhagia

	Respondents	**Percent**
Plus	160	80.0
Minus	40	20.0
Total	**200**	**100.0**

Menorrhagia accounts for 80 % accounting the clinic attetants

Patients with menorrahagia

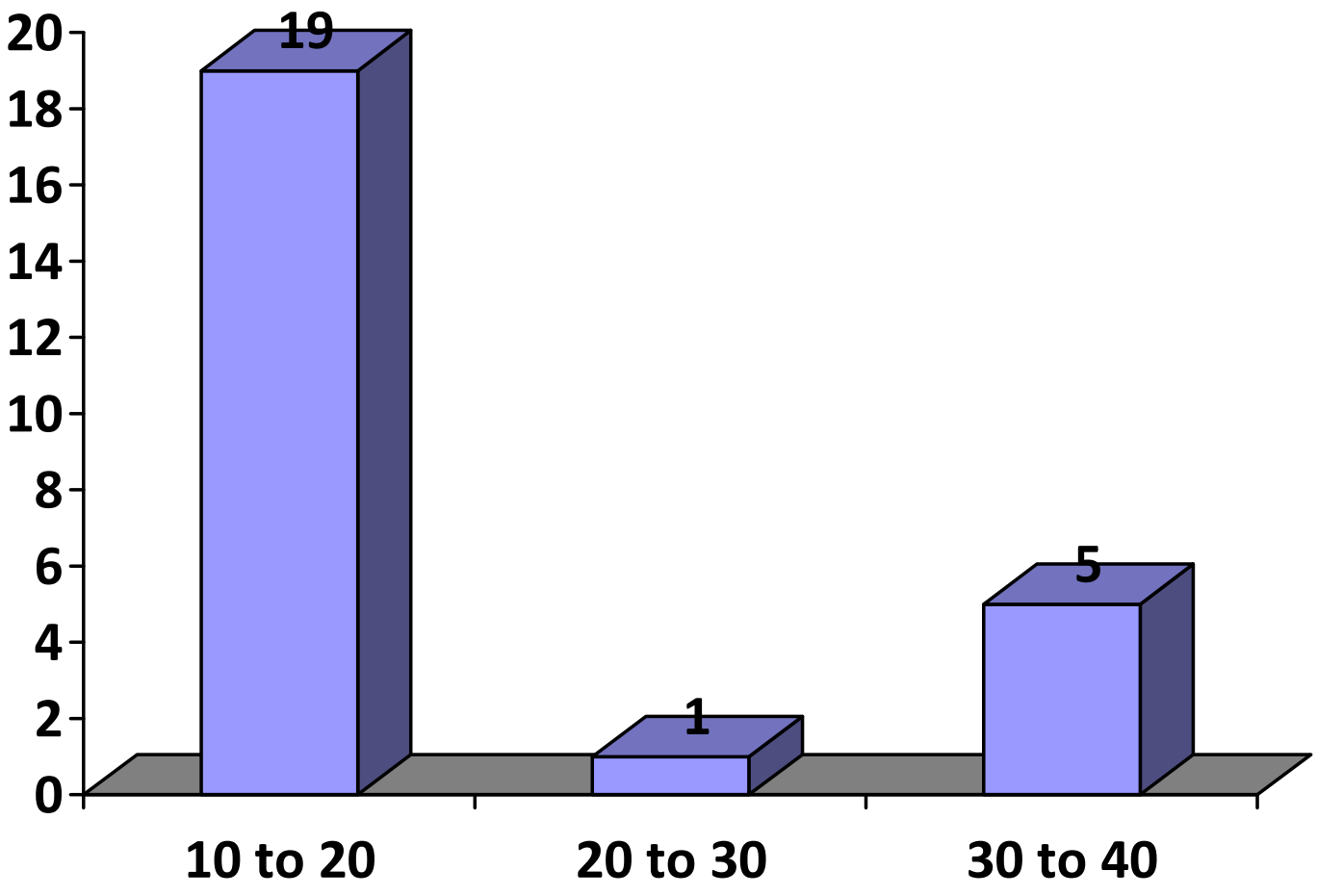


Age distribution of Coagulation disorders

Sl. No.	Age Group	Respondents
1	10 -20	19
2	20-30	1
3	30-40	5
TOTAL		**25**

The age group with coagulation disorders predominately symptomatic in the earlier age itself.

Age distribution of Coagulation Disorders

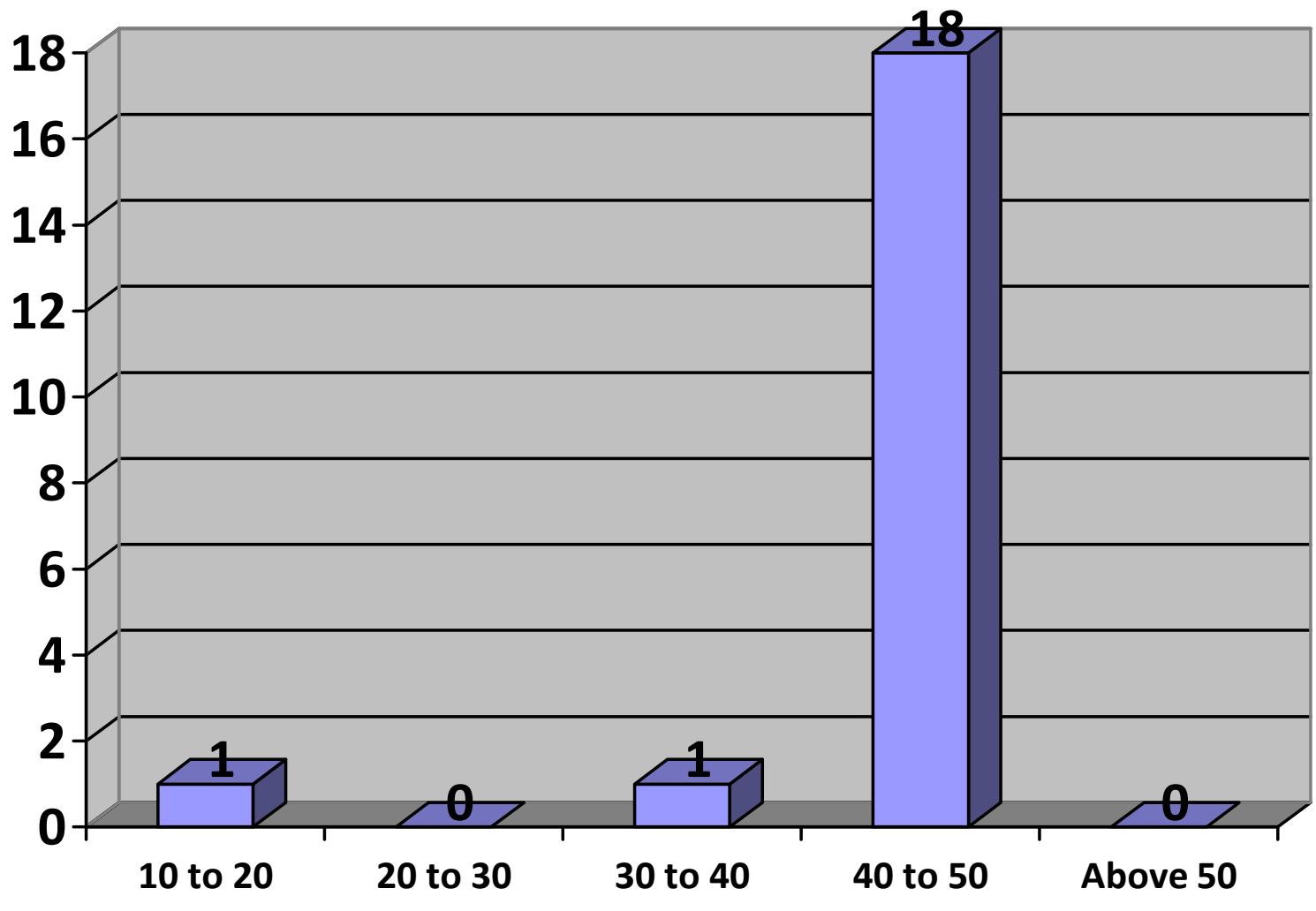


Age distribution of Chronic endometritis

Sl. No	Age group	Respondents
1	10 -20	1
2	20-30	0
3	30-40	1
4	40-50	18
5	Above 50	0
TOTAL		**20**

Disease predominately involves in the age group of 40-50.

Age distribution of Chronic endometritis

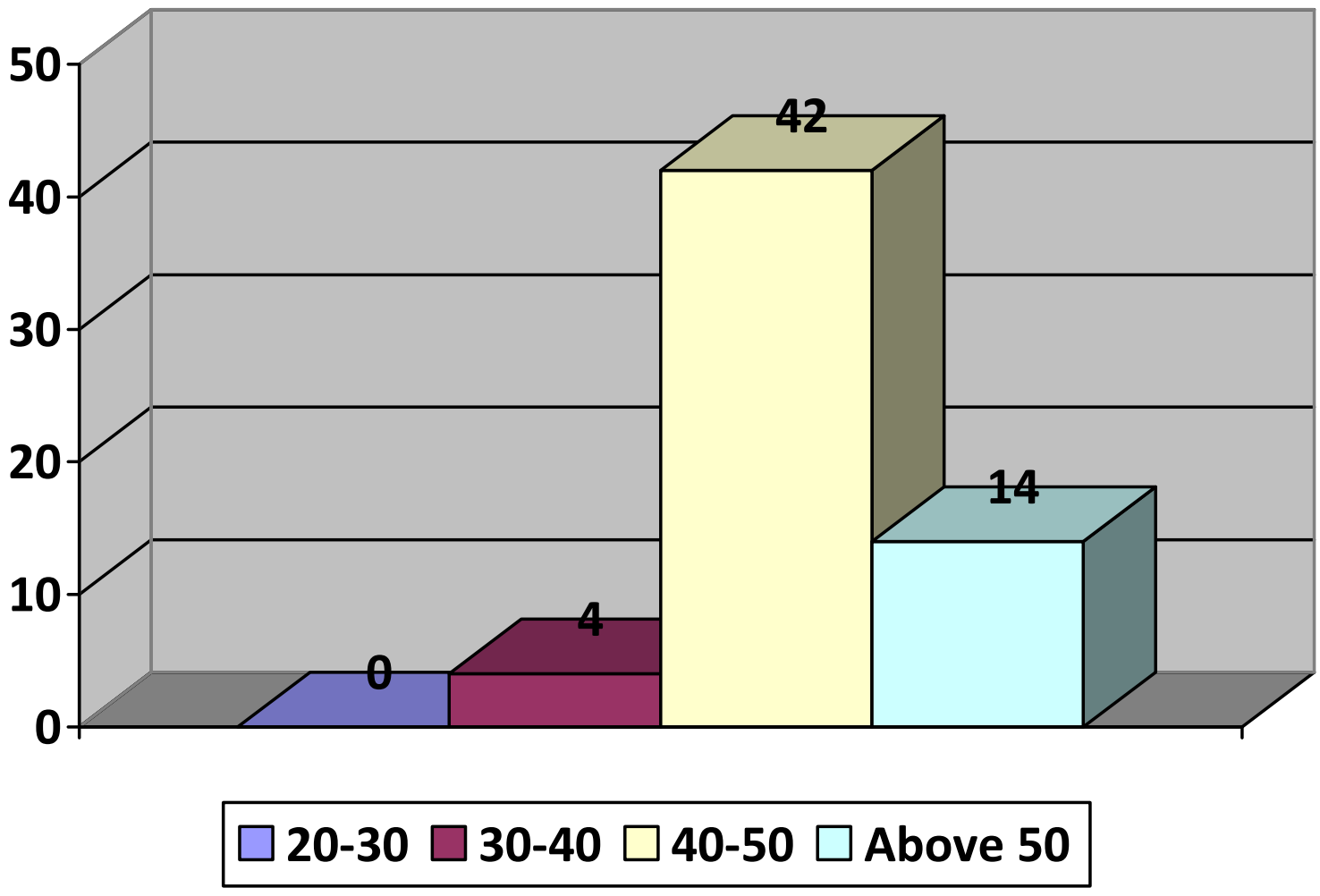


Age distribution of Ovulatory Dysfunction

Sl. No	Age group	Respondents
1	20-30	0
2	30-40	4
3	40-50	42
4	Above 50	14
TOTAL		**60**

Symptoms predominates with the age group of 40-50.

Age distribution of Ovulatory Dysfunction



Association of BMI and Symptoms

Sl. No.	BMI		Hypo menorrhea	Amenorrhoea	Menorrhagia
1	18-25	166	45	16	83
2	< 18	1	0	1	1
3	25-29.9	33	25	20	27

Definite increase in the incidence of menorrhagia with increasing BMI.

Association of Anemia with Symptoms

Hemoglobin Level	Pts with coagulation abnormality N=25	Pts without coagulation abnormality N=80	P value
<6 g/dL	4 (16)	2(2.5)	0.001
6 -10 g/dL	19 (76)	50 (62.5)	0.287
10 > g/dL	2 (8)	18 (22.5)	0.061

Hb less than 6 grams have a significant p value of 0.001.

Out of 200 patients examined between 13 years and 55 years from June 2011 to May 2012 by careful history taking, clinical examination, investigations including sonography, endometrial histology and number of patients taking anticoagulants and oral contraceptive pills, hormones, and NSAIDs.

Patients are subjected to complete blood count, platelet count, bleeding time, clotting time, prothrombin time, activated partial thromboplastin time.

Results are statistically analysed.

Incidence of non-structural causes of 52.5 % in 200 cases and large amount of cases are not identified because of the lack of facilities to determine the factor assay and hormone assays as they are cost effective. By increasing the diagnostic modalities patients in the AuB (N) category will be categorized in that particular groups.

Incidence of coagulation abnormalities accounts for 12.5 % including 3 patients with prolonged prothrombin time in patients with warfarin overusage in the treatment of DVT.

Incidence of endometritis as low as 10 % because most of the cases subsides with antibiotics and they go unnoticed.

Incidence of detectable ovulation dysfunction is 30 % in thyroid disorders, thyroid dysfunction modifies the balance between the coagulation and the fibrinolytic system, coagulation test revealed hypocoagulable state in hypothyroidism and hypercoagulable state in hyperthyroidism.

DISCUSSION

DISCUSSION

I. Coagulation Disorders

1. Regarding the incidental studies

Ediund et al., Dilley et al., and Woo et al., have the incidence of 20 %, 13 % and 30 % respectively.

Trasi et al., and Kadir et al., accounts for 19.16 % and 17%. My study shows 12.5 %.

2. Menorrhagia since menarche 16 (64 %) patients had the symptoms with the significantly higher p value of <0.000 in patients with hemostatic disorders similarly noted by Kadir et al., in 53.1 % and Ragini et al., 65 %.

3. Frequency of bleeding symptoms bruising and bleeding from gums have a significant p value of 0.001. Similar findings are revealed from the same p value of post-operative bleeding and postpartum bleeding with the p values of 0.000 and 0.001. Four parameters that were statistically significant are menorrhagia since menarche, history of bleeding symptoms, post-operative bleeding, postpartum bleeding and haemoglobin level <6g.

II. AUB(E)

Regarding AUB(E) Chronic endometritis had a p value of 0.487 for TB culture with p value of 0.216 and for TB ascitis and pleural effusion has a p value of 0.109. Endometritis patients usually subsides with antibiotic and the association of uterine bleeding is usually less.

III. Thyroid dysfunction.

In the examination of 200 patients 45 patients had hypothyroidism and 5 patients had subclinical hypothyroidism and 10 patients have hyperthyroidism.

Scot and Mussey observed menstrual irregularities in 56 % of hypothyroid patients. Menorrhagia and metrorrhagia alone are combined abnormal pattern seen in 75 %

Joshi et al., says 45 % increased incidence of AuB in thyroid dysfunction patients and 44 % of patients are apparently Euthyroid.

Wilansky et al., shows the prevalence of 22 % in early hypothyroid patients. Out patients shows that there is a definite 30 % incidence of menstrual irregularities with the significant p value of 0.05 for hypothyroidism and 0.004 for subclinical hypothyroidism and 0.008 for hyperthyroidism.

I conclude menstrual irregularities are significantly more frequent in patients with thyroid dysfunction and may preclude thyroid dysfunction also prompt investigations of TSH, T3, T4 is definitely warranted.

SUMMARY

SUMMARY

1. During the one year study May 2011 to June 2012 of 2318 patients of which an average of 39.33 % had AUB.

2. Overall incidence of detectable non-structural causes in our hospital is 52.5 %.

3. Definite increase in incidence of abnormal uterine bleeding in both extremes of age.

4. Incidence of identifiable coagulation abnormalities is 12.5 %.

5. Incidence of endometrial causes is 10 %.

6. Incidence of detectable ovulation dysfunction is 30 %. There is a definite association of menstrual irregularities with the thyroid dysfunction irrespective of age factor.

CONCLUSION

CONCLUSION

Considering the abnormal menstrual bleeding which is the most common complaint that the reproductive age group women bring to the physicians, all clinicians who provide the primary care for the women must have an organized logical approach to the evaluation and treatment of the problem.

Careful history taking algorithmic approach of investigations rules out non-structural causes. In a considerable amount of patients and avoids unnecessary hysterectomy.

Evaluation of patients with the abnormal uterine bleeding is an art of the clinician in getting the diagnosis with simple reliable tests.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. BEREK'S AND NOVAK'S GYNAECOLOGY 18th edition

2. Williams obstetrics and gynaecology 23rd edition

3. Perrot- Applanat M, Groyer- Picard MT, Garcia E, et al: immunocytochemical demonstration of estrogen and progesterone receptors in the muscle cells of uterine arteries in rabbits and humans. Endocrinology 123:1511, 1988

4. Sugino N, Kashida S, Karube Harada, et al: expression of vascular endothelial growth factors and its receptors in human endometrium throughout the menstrual cycle and in early pregnancy. Reproduction 123: 379, 2002

5. Tsai SJ, Wu MH, Chen HM, et al: fibroblast growth factor-9 is an endometrial stromal growth factor. Endocrinilogy 143:2715, 2002

6. Jones K, McGurgan P, Sutton C. second generation endometrial ablation techniques. Curr Opin ostet Gynecol 2000; 12: 273-276

7. Kremer C, Duffy S. in vitro studies of cryoablation of the endometrium. Am J Obstet Gynaecol 2000; 183: 22-27

8. Kadir RA, Lee CA, Pollard D, Economides DL. DDAVP nasal spray for treatment of menorrhagia in women with inherited bleeding disorders: a randomized placebo controlled cross over study. Hemophilia 2002; in press

9. Stewart A, Cummins, Gold L, Jordan R, Phillips W. the effectiveness of the levonorgesterol releasing intra uterine system in menorrhagia: a systematic review. Br J obstet gynaecol 2001; 108: 74-86

10. Hurskainen R, Teperi J, Aalto S et al. quality of life and cost effectiveness of levonorgesterol releasing intra uterine system versus hysterectomy for the treatment of menorrhagia: a randomized trial. Lancet 2001:357: 273-277

11. Zhu P, Hongzhi L, Weniang S. observation of the activity of factor VIII in the endometrium of women pre and post insertion of three types of IUDs. Contraception 1991; 44: 367-387

12. Maresh M, Metcalfe M, Mcpherson K. the VALUE national hysterectomy study: description of patients and their surgery. Br J obstet gynecol 2002; 109:302-312.

13. Tripathy SN. The current issues in obstetrics and gynaecology 2007; 12: 197-210

14. Isadore N. Rosenberg. Menstrual instability in thyroid disease. Clin Obstet Gynecol 1969; 12(3): 755-70

15. Cope E. Dysfunctional uterine bleeding. Br Med J 1971; 2(762): 631-2.

16. Ralph CB and Morris ED. The menstrual pattern in hyperthyroidism and subsequent post therapy hypothyroidism. Surg Gynec Obstet 1955; 100: 19-26.
4. Scot JC and Mussey E. Menstrual patterns in myxedema. Am J Obstet Gynaecol 1964; 90: 161-65.

17. Wilansky DL, Griesman B. Early hypothyroidism in patients with menorrhagia. Am J Obstet Gynaecol 1989; 160:673-7

18. Joschi JV, Bhandarkar SD, Chadha M, Balaiah D, Shah R. Menstrual irregularities and lactation failure may precede thyroid dysfunction on goiter. J Postgrad Med 1993; 39(3): 137-41.

19. Krassas GE, Pontirides N, Kaltsas J, Papadopoulou P, Batrinos M. Menstrual disorders in thyrotoxicosis. Clin Endocrinol 1994; 40 (5): 641-44.

20. Goldsmith RE, Sturgis SH, Leiman J and Standbury JB. J clin Endocrinology 1952; 12: 846-55.

21. Cunningham F G, Gant N F, Leveno K J, *et al.* William's

22. Obst., 21st Edition, McGraw Hill, 2001.pp. 1344.

23. Berek JS, Adarshi EY and Hillard PA. In endocrine disorders.

24. Novaks Gynaecology, 12th Edn. William & Wilkins, Gopson paper Ltd., Noida. 2001; pp. 864.

25. Nesse R. Abnormal vaginal bleeding in perimenopausal women. *Am Family Physician* 1989; 40 : 185.

26. Wilson, Beecham, Carrington. Obstetric and Gynaecology, 5th edn.pp. 80.

27. Wilansky DL, Berrnard G. Early hypothyroidism in patients with menorrhagia. *Am J Obst Gynae* 1989; 160(3): 673-77.

28. Singh L, Agarwal CS, Chowdhery SR, *et al*. Thyroid profile in Infertile women. *J Obst Gynae India* 1990; 40; 248-53.

29. Doifode CD, Fernandes K. Study of thyroid dysfunction in patients with DUB. *J Obs Gyn India* 2001; 51(2): 93-95.

30. Menon VK, Barucha KE. Menstrual dysfunction and thyroid disease. J.Obst.Gynae. India. 1995; 45(4): 521-26.

31. Abebe, A., M. Lakew, D. Kidane, Z. Lakew, K. Kiros, and M. Harboe. 2004.

32. Female genital tuberculosis in Ethiopia. Int. J. Gynecol. Obstet. 84: 241-246.

33. Bhanu, N.V., U.B. Singh, M. Charaborty, N.Suresh, J.Arora, T.Ranu, D.Takkar, and P.Seth.2005. Improved diagnostic value of PCR in the Diagnosis of female genital tuberculosis leading to infertility. J. of Med. Microbiol. 54: 927-931.

34. Chakravorty S., M. Dudeja, M. Hanif and J.S Tyagi .2005. Utility of universal sample processing methodology, combining smear microscopy, culture, and PCR, for diagnosis of pulmonary tuberculosis. J. Clin. Microbiol. 43: 2703-8.

ANNEXURES

- **Proforma**
- **Master Table**

Name :

Age :

Sex :

P L A :

IP.NO :

OP.NO

C/o : Menorrhagia Polymenorrhoea
Metrorrhagia Oligamenorrhoaea
Hypomenorrhea Amenorrhoea

H/O Pres Illness : Bleeding Irregular Regular Absent

Frequency <21 days 21-35 days >35 days

Duration <8 days 2-8 days <2 days

Volume >80ml 15-80ml <15ml

Pads clots Pain

Duration of Disease :

Fever/ Loss of weight / Loss of apetite/ Gain of weight

Cold intolerance / Heat

Intolerance/ Constipation/ Diarrhoea/ Palpitations

Bleeding gums/ Per Rectum/ Hematomas/ Hemetemesis

Marital H/O Dyspareunia/ Post coital Bleeding/
Illegal Sexual contact

Obst H/O P L A

Criminal Abortions/Sterilisation/Puerperium infection/PPH /Blood Transfusion/Parentral Fe/Abruption/Periods Established

Past H/O HT/DM/Epilepsy/Heart Disease/H/O TB/ H/O Swelling in neck

Drug H/O	Anti-Hypertensives/ Coagulants/ Convulsants / Ocpills/ATT
Per H/O	Diet/Alcoholic/Smoker
Family H/O	TB in family member/Thromboembolic disease/ TIA / Bleeding disorder in Siblings
O/E	Conscious Oriented Afebrile Dyspnoea+/- Anaemia Jaundice
Pedal odema	Lymph node Varicosity
Vital	T PR BP BMI
	CVS RS CNS
Thyroid	Breast Spine
L/E Inspection Scars/	P/A Shape Umblicus Distention
	Hernial orfice
	All Quadrants Moves with Respiration
PALPATION	Soft Organomegaly Spleen/ Liver/ Free fluid
PERCUSSION	Over the mass Shifting Dullness/ Fluid Thrill
AUSCULTATION	Bowel Sounds/Abnormal Bruit/ AV Fistula
LOCAL EXAMINATION /polyp/Scars	EXT genitalia/ Public Hair/ Pad of fat
S/E	
VAGINA	Polyp Granulomas Discharge
CERVIX	Appearance
P/V	Uterus Size/Position/Adnexa
P/R	

INVESTIGATIONS

CBC HB TC DC ESR PCV PT RBC

PERIPHERAL SMEAR THROID FUNCTION TEST

LFT

BT CT PT aPTT FACTOR VIII

FACTOR IX

URINE

MANTOUX SPUTUM/AFB X-Ray CHEST

USG

ENDOMETRIAL CULTURE ENDOMETRIAL HPE

Sl. No.	Name	Age	IPNO	BMI	Oligo/ Hypo	Amen	Menorragia	Hb %	Platelet Count	BT	CT	PT	aPTT	USG	TSH	Free T3	Free T4	EM Culture	Endometrial Histology	LFT	RFT
1.	Mariyaye	37	5240	20	+	+	–	7.2	115000	2	4	11	23	N	N	N	N	N	N	N	N
2.	Chandra	42	6558	24.6	–	–	+	8.8	100000	2	4	10	23	N	0.50↑	0.5	0.4	N	N	N	N
3.	Backiyam	40	6451	22	–	+	+	8.2	120000	2	5	11	24	N	0.23↓	3.2↑↑	4.2↑↑	N	N	N	N
4.	Sarala Devi	50	6550	27	+	+	⊕	8	100000	1.80	4	10	20	N	0.55↑↑	0.2↓	0.3↓	N	N	N	N
5.	Maharayee	43	6559	25	+	–	+	8	120000	3	5	15	15	N	N	N	N	N	Chronic Nonspecific endometritis	N	N
6.	Rani	40	6589	26	+	+	⊕	7.5	100000	2	3	15	23	N	0.65↑↑	0.1↓	0.2↓	N	N	N	N
7.	Sumithra	37	4168	25	–	–	+	7	50000	3	4	25	24	N	N	N	N	N	N	N	N
8.	Kannamal	42	6486	22	+	+	–	7.5	150000	2	5	11	24	N	N	N	N	N	N	N	N
9.	Renganayagi	40	6579	23	+	+	–	7.4	150000	2	3	11	25	N	N	N	N	N	N	N	N
10.	Jency	40	6487	24	+	–	+	8.2	100000	2	5	15	24	N	N	N	N	N	Chronic Nonspecific endometritis	N	N
11.	Sahaya Mary	50	6614	25	+	+	–	7.3	150000	2	5	10	20	N	N	N	N	N	N	N	N
12.	Uma	47	6446	24.2	+	+	–	7.1	150000	2	4	10	20	N	N	N	N	N	N	N	N
13.	Valarmathi	52	6774	20	+	+	⊕	8.5	100000	2	5	10	24	N	0.75↑↑	0.2↓	0.23↓	N	N	N	N
14.	Naga Jothii	52	6580	22	+	+	–	7	120000	2	4	10	20	N	N	N	N	N	N	N	N
15.	Jensi	20	6485	24	–	–	+	7.2	110000	2	4	11	22	N	N	N	N	N	N	N	N

16.	Sahaya Mary	50	6615	25	+	+	–	8.2	100000	2	5	12	20	N	0.55↑↑	0.23↓	0.24↓	N	N	N	N
17.	Uma	47	6447	20	+	–	+	10.7	120000	2	5	11	20	N	N	N	N	N	Chronic Endometric	N	N
18.	Kalavathy	53	6773	26	+	+	+	8.6	100000	3	4	12	22	N	0.56↑↑	0.28↓	0.24↓	N	N	N	N
19.	Mariyayee	50	6804	23	–	–	+	7.6	120000	2	5	10	20	N	0.32	0.20	0.30	N	N	N	N
20.	Kokila	40	6802	22	+	–	+	10.8	110000	2	6	10	20	N	N	N	N	N	Chronic Endometric	N	N
21.	Periyakka	48	6204	21.1	–	+	+	8.8	120000	2	5	12	22	N	0.245↓	2.05↑	40↑	N	N	N	N
22.	Selvi	50	7150	25	+	+	–	8	110000	2	4	12	23	N	N	N	N	N	N	N	N
23.	Vellaiyammal	45	7672	26	+	+	–	8	110000	2	4	10	23	N	N	N	N	N	N	N	N
24.	Chinnamani	35	4711	24	+	+	+	10	100000	2	4	10	20	N	0.57↑↑	0.13↓	0.14↓	N	N	N	N
25.	Rajalakshmi	44	4879	22	+	+	–	6.5	100000	2	4	11	15	N	N	N	N	N	N	N	N
26.	Chellammal	50	7882	20	–	–	+	8.8	120000	2	5	10	22	N	0.55	0.50	0.20	N	N	N	N
27.	Nagalakshmi	49	7883	21.6	+	+	–	7	120000	2	5	10	23	N	0.25	0.30	0.40	N	N	N	N
28.	Sathiya	19	7475	19	–	–	+	5	50000	10↑	5	10	22	N	N	N	N	N	N	N	N
29.	Kalaiselvi	39	5091	20	+	+	–	6	120000	6	5	10	22	N	0.25	0.30	0.40	N	N	N	N
30.	Rani	19	6588	20	–	–	+	6	60000	7↑	5	10	20	N	N	N	N	N	N	N	N
31.	Dhanalakshmi	43	8147	22	–	+	+	8.8	120000	2	5	11	22	N	0.30	3.02	20	N	N	N	N
32.	Mariyammal	40	8480	28	+	+	+	8.8	110000	2	5	11	22	N	0.56↑↑	0.20↓	0.25↓	N	N	N	N

33.	Kunjammal	46	5167	27	+	+	+	10.2	110000	2	4	10	23	N	0.57↑↑	0.20↓	0.15↓	N	N	N	N
34.	Thanalakshmi	13	8582	19	–	–	+	5	120000	2	5	20	26	N	N	N	N	N	N	N	N
35.	Annakamu	16	5781	19	–	–	+	3.5	115000	2	5	20↑	27↑	N	N	N	N	N	N	N	N
36.	Meenakshi	50	6120	20	+	–	+	7	120000	2	5	10↑	20↑	N	N	N	N	N	Chro Endometritis	N	N
37.	Sarasu	43	2528	21	+	–	+	7.2	100000	2	4	11	22	N	N	N	N	N	N	N	N
38.	Aimo	43	8761	26	+	+	+	10.5	150000	2	4	10	23	N	0.58↑↑	0.2↓	0.15↓	N	N	N	N
39.	Valarmathy	33	8893	25	+	–	+	8	160000	2	3	10	22	N	N	N	N	N	N	N	N
40.	Sahera Bee	15	8976	22	–	–	+	4.5	25000	10	4	10	20	N	N	N	N	N	N	N	N
41.	Meena	28	9056	20	+	–	+	8	100000	2	3	12	23	N	N	N	N	N	N	N	N
42.	Rani	13	8999	25	–	–	+	4	130000	2	5	20	23	N	N	N	N	N	N	N	N
43.	Meenammal	40	8006	24	+	–	+	8	120000	2	4	10	22	N	N	N	N	N	N	N	N
44.	Selvi	37	8028	22	+	+	+	10.5	110000	2	4	10	20	N	0.57↑↑	0.21↓	0.21↓	N	N	N	N
45.	Selvarani	45	9265	23	+	+	+	8.2	120000	2	3	10	22	N	0.57↑↑	0.24↓	0.21↓	N	N	N	N
46.	Palaniyammal	33	9368	22	+	–	+	8.2	130000	2	5	11	24	N	N	N	N	N	N	N	N
47.	Solayee	50	9570	23	+	–	+	7.5	140000	2	4	12	25	N	N	N	N	N	N	N	N
48.	Mariyayee	40	5654	21	+	–	+	7.6	150000	2	6	10	24	N	N	N	N	N	N	N	N
49.	Pappathi	50	9995	20	–	+	+	8.2	100000	2	3	10	23	N	0.23↓	0.435↑	0.40↑	N	N	N	N
50.	Banu	14	1058	20	–	+	+	6.5	46000	2	4	10	23	Sple	N	N	N	N	N	N	N

51.	Chellammal	49	2627	25	+	+	+	8	120000	2	5	10	22	N	N	N	N	N	N	N
52.	Vasanthi	40	2048	12	+	–	+	10.7	110000	2	5	12	24	N	N	N	N	N	Chronic Endometric	N	N
53.	Siraj Banu	17	10781	19	–	–	+	6.5	60000	10↑	5	10	24	N	N	N	N	N	N	N	N
54.	Divya	16	10782	17	–	+	+	7.5	45000	2	5	10	22	Spleeno megaly	N	N	N	N	N	N	N
55.	Sajitha	15	10041	21	–	–	+	7.2	120000	2	4	11	23	N	N	N	N	N	N	N	N
56.	Parvatham	40	10072	28	+	+	+	8.6	110000	2	4	9	20	N	0.57↑↑	0.12↓	0.13↓	N	N	N	N
57.	Maniyammai	49	1086	26	+	–	+	8	100000	2	5	10	22	N	N	N	N	N	N	N	N
58.	Vanathi	15	2348	24	+	–	+	8.2	150000	2	5	11	23	N	N	N	N	N	N	N	N
59.	Kowsalya	13	6801	20	–	–	+	6.5	100000	2	5	↑	↑	N	N	N	N	N	N	N	N
60.	Malar	17	6805	20	–	–	+	6	50000	10↑	5	10	22	N	N	N	N	N	N	N	N
61.	Mookayee	45	6820	20	+	–	+	10	120000	2	5	10	22	N	N	N	N	N	Chronic Endometritis	N	N
62.	Victoria	16	10465	21	–	–	+	8.2	120000	2	4	10	21	N	N	N	N	N	N	N	N
63.	Kanagavalli	55	10332	25	–	–	+	8.8	100000	2	5	10	22	N	0.55↑↑	0.33↓	0.40↓	N	N	N	N
64.	Kowsalya	15	10311	22	+	–	+	8.4	150000	2	4	10	21	N	N	N	N	N	N	N	N
65.	Maryayee	45	6113	26	+	+	+	10.2	120000	2	5	10	28	N	0.68↑↑	0.15↓	0.12↓	N	N	N	N
66.	Kokila	14	5414	24	–	–	+	7.5	100000	2	4	10	25	N	N	N	N	N	N	N	N
67.	Banumary	44	10508	19	–	+	–	8.2	110000	2	4	10	22	N	0.32	0.28	0.45	N	N	N	N

68.	Anna Poorani	24	10330	20	–	–	+	6	50000	2	4	22↑	23	N	N	N	N	N	N	N	N
69.	Dhanalakshmi	30	10692	22	+	+	+	7.2	120000	2	5	10	20	N	0.67↑↑	0.12↓	0.25↓	N	N	N	N
70.	Chellayee	55	10887	21	+	–	+	7.4	155000	2	4	11	23	N	N	N	N	N	N	N	N
71.	Aseena	15	10952	21.4	+	–	+	7.2	150000	2	4	11	24	N	N	N	N	N	N	N	N
72.	Parvathy	40	10954	20	+	–	+	8	110000	2	4	10	22	N	N	N	N	N	Chronic Endometritis	N	N
73.	Sathya	29	10926	26	+	+	+	10.7	110000	2	4	10	20	N	0.58↑↑	0.12↓	0.23↓	N	N	N	N
74.	Santhamary	15	11468	19	–	–	+	7	100000	2	4	25.70	26.71	N	N	N	N	N	N	N	N
75.	Kowsalya	13	9266	20	–	–	+	7.5	120000	2	5	10	22	N	N	N	N	N	N	N	N
76.	Padma	28	11980	22	+	+	+	8.2	120000	2	4	10	20	N	0.57↑↑	0.12↓	0.12↓	N	N	N	N
77.	Panchu	46	12969	28	+	+	+	10.4	125000	2	5	11	22	N	0.58↑↑	0.12↓	0.13↓	N	N	N	N
78.	Rajammal	45	10156	23	–	–	+	8	155000	2	5	10	22	N	N	N	N	N	N	N	N
79.	Jothi Mary	47	12345	24	+	+	+	8	140000	3	5	11	22	N	0.59↑↑	0.12↓	0.13↓	N	N	N	N
80.	Manikkammal	55	12468	22.4	–	–	+	7.9	120000	2	4	11	23	N	N	N	N	N	N	N	N
81.	Rajathi	50	12453	28.6	–	–	+	8.8	110000	2	4	11	22	N	N	N	N	N	N	N	N
82.	Selvi	52	12860	20	–	+	–	8.8	120000	3	4	10	22	N	0.15	2.3	0.45	N	N	N	N
83.	Mariyayee	47	12862	22	+	–	+	10.8	110000	2	4	12	24	N	N	N	N	N	Chronic endometrium	N	N
84.	Anthoniammal	48	12870	23	+	–	+	8.2	120000	2	5	11	24	N	N	N	N	N	N	N	N

85.	Sakunthala	49	12850	23	+	+	–	9	120000	2	4	12	24	N	0.6	0.12	0.22	N	N	N	N
86.	Chandra	47	12857	20	+	–	+	10.8	110000	2	4	10	22	N	N	N	N	N	Chronic Endometrium	N	N
87.	Jeyabarathi	48	12854	22	+	+	+	7	120000	2	4	11	23	N	0.55↑↑	0.12↓	0.22↓	N	N	N	N
88.	Kala	50	12958	24	+	–	+	8.3	150000	2	5	11	25	N	N	N	N	N	N	N	N
89.	Kanniammal	51	7091	22	–	+	+	7.5	120000	2	4	11	22	N	N	N	N	N	N	N	N
90.	Padma	43	6082	23	–	+	+	8	140000	2	5	11	23	N	N	N	N	N	N	N	N
91.	Pitchaiyammal	44	10923	24	+	–	+	8.2	160000	2	6	11	24	N	N	N	N	N	N	N	N
92.	Parvatha	42	40423	20	+	–	+	4.5	180000	2	5	11	25	N	N	N	N	N	N	N	N
93.	Geetha	40	12401	23	–	+	+	8.3	200000	2	4	11	26	N	N	N	N	N	N	N	N
94.	Kala	55	12400	24	–	+	+	7.5	220000	2	4	12	24	N	N	N	N	N	N	N	N
95.	Sampoorani	45	10410	26	+	+	+	10.4	120000	2	4	10	22	N	0.67↑↑	0.12↓	0.13↓	N	N	N	N
96.	Pushpam	14	10444	20	–	+	+	8.2	240000	2	5	11	23	N	N	N	N	N	N	N	N
97.	Meena	17	10420	19	–	–	+	6	80000	10	5	10	22	N	N	N	N	N	N	N	N
98.	Thanrapu	50	10415	25	+	+	+	8.6	110000	2	4	11	22	N	0.77↑↑	0.12↓	0.13↓	N	N	N	N
99.	Banupriya	52	10422	25	+	+	+	10.2	110000	2	4	10	24	N	0.67↑↑	0.12↓	0.13↓	N	N	N	N
100.	Jothiammal	53	10425	23	–	–	+	7.5	110000	2	5	10	22	N	N	N	N	N	N	N	N
101.	Parvathy	55	10423	22	–	–	+	7	120000	2	4	11	23	N	N	N	N	N	N	N	N
102.	Seetha	16	10523	19	–	–	+	5	50000	13	5	10	20	N	N	N	N	N	N	N	N

103.	Mary	15	10623	20	–	–	+	7.2	130000	2	5	11	24	N	N	N	N	N	N	N
104.	Shanthi	44	10723	22	+	+	+	10.5	120000	2	4	10	22	N	0.58	0.12	0.22	N	N	N
105.	Kavitha	36	10823	20	–	–	+	6.8	60000	2	4	20↑	22	N	N	N	N	N	N	N
106.	Madhy	28	10421	24	–	–	+	7.3	140000	2	5	11	24	N	N	N	N	N	N	N
107.	Kala	47	10426	22	+	+	–	8	110000	2	4	10	22	N	0.56	0.12	0.23	N	N	N
108.	Deepa	48	10424	23.6	–	–	+	8.6	150000	2	5	11	26	N	N	N	N	N	N	N
109.	Divya	49	10428	21.6	–	–	+	8.4	160000	2	6	15	26	N	N	N	N	N	N	N
110.	Jenifer	18	10427	20	–	–	+	4.5	60000	10↑	5	10	20	N	N	N	N	N	N	N
111.	Vishnu Priya	18	10526	21.4	–	–	+	7.5	140000	2	7	15	24	N	N	N	N	N	N	N
112.	Monina	42	10724	22.2	–	–	+	7.6	150000	2	8	15	26	N	N	N	N	N	N	N
113.	Mariyayee	46	10824	22.4	–	–	+	4.5	160000	2	5	14	25	N	N	N	N	N	N	N
114.	Panchavarnam	50	10826	23.4	–	–	+	7	120000	2	4	15	24	N	N	N	N	N	N	N
115.	Mumtath	52	10419	25	–	–	+	7.5	140000	2	7	10	25	N	N	N	N	N	N	N
116.	Latha	53	10524	26	–	–	+	7.2	150000	2	8	12	25	N	N	N	N	N	N	N
117.	Muthammal	55	15523	26	–	–	+	7.2	150000	2	8	12	25	N	N	N	N	N	N	N
118.	Thavamani	40	15642	22	+	–	+	8.4	130000	2	5	11	22	N	N	N	N	N	N	N
119.	Kathayee	40	1642	23	+	+	+	8.6	120000	2	4	10	20	N	0.67	0.12	0.22	N	N	N
120.	Paramu	52	16959	24	+	+	+	10.4	110000	2	4	11	22	N	0.57	0.13	0.23	N	N	N

121.	Parvathy	40	12156	20	+	+	–	7.0	100000	2	4	10	22	Ascitis pl effusion	N	N	N	N	N	N	N
122.	Suseela	40	16685	20	+	+	–	7.2	100000	2	5	11	23	Ascitis pl effusion	N	N	N	N	N	N	N
123.	Bharathi	22	16955	23	+	–	+	7.3	120000	2	4	11	23	N	N	N	N	N	N	N	N
124.	Pharvathy	45	16417	22	+	+	–	7	120000	2	4	11	24	N	0.56	0.12	0.43	N	N	N	N
125.	Kathayee	40	16418	24	+	–	+	7.4	140000	2	5	11	24	N	N	N	N	N	N	N	n
126.	Latha	46	17449	20	+	+	+	6.2	120000	2	4	11	25	N	0.60	0.22	0.20	N	N	N	N
127.	Muthamilselvi	53	12123	25	+	–	+	7.5	150000	2	4	11	25	N	N	N	N	N	N	N	N
128.	Marikamu	34	17496	22	+	–	+	8	120000	N	N	N	N	N	N	N	N	Chrone Endomertis	N	N	N
129.	Annakamu	40	17558	26	+	–	+	7.6	160000	2	5	11	25	N	N	N	N	N	N	N	N
130.	Sewahari	44	17659	20	+	–	+	8.2	110000	2	4	12	22	N	N	N	N	N	Endometritis	N	N
131.	Suseela	48	17521	24	+	–	+	7.3	120000	2	7	10	22	N	N	N	N	N	N	N	N
132.	Rani	40	17523	22.6	+	–	+	7.4	130000	2	8	11	23	N	N	N	N	N	N	N	N
133.	Selvarathna	40	17528	23	+	+	–	10.8	120000	2	5	10	22	N	0.60	0.2	0.2	N	N	N	N
134.	Chinnapillai	46	10354	20	+	+	–	8.2	110000	2	5	11	12	Ascitis pl effusion	N	N	N	N	N	N	N
135.	Sundarammal	52	11470	23	+	–	+	7.2	120000	2	4	10	22	N	N	N	N	N	N	N	N

136.	Sumathi	15	11468	22	+	–	+	7.8	130000	2	4	10	22	N	N	N	N	N	N	N	N
137.	Shanthi	14	11462	22.4	–	–	+	8.2	140000	2	4	10	24	N	N	N	N	N	N	N	N
138.	Parvathy	13	11463	22.1	–	–	+	7.6	150000	2	5	11	25	N	N	N	N	N	N	N	N
139.	Chandra	53	16441	22.3	–	–	+	7.5	160000	2	6	11	26	N	N	N	N	N	N	N	N
140.	Thangammal	40	19222	22	+	+	–	5.6	12000	2	5	10	22	N	0.70↑↑	0.12↓	0.3↓	N	N	N	N
141.	Arayee	45	10162	23	+	+	+	8	120000	2	5	10	20	N	0.65↑↑	0.22↓	0.12↓	N	N	N	N
142.	Mariyaee	46	10112	23	+	+	+	7	120000	2	4	10	20	N	0.66↑↑	0.20↓	0.13↓	N	N	N	N
143.	Mariamma	40	10182	22	+	+	+	8.2	20000	2	4	10	22	N	0.56↑↑	0.42↓	0.43↓	N	N	N	N
144.	Chinnammal	42	10181	21	–	–	+	8.8	120000	2	4	10	22	N	0.57↑↑	0.23↓	0.33↓	N	N	N	N
145.	Divya	16	10180	19.2	–	–	+	7.5	50000	12↑	4	10	23	N	N	N	N	N	N	N	N
146.	Latha	17	10210	24	–	–	+	7.2	125000	2	5	10	24	N	N	N	N	N	N	N	N
147.	Seetha	26	10217	25	–	–	+	7.4	130000	2	5	12	25	N	N	N	N	N	N	N	N
148.	Kavitha	15	10118	26	+	–	+	7	140000	2	6	13	26	N	N	N	N	N	N	N	N
149.	Noorjahan	28	10117	22.2	+	–	+	7.2	150000	2	7	14	25	N	N	N	N	N	N	N	N
150.	Ramzan	48	10178	22	+	+	–	8.2	110000	2	4	10	22	N	0.67	0.12	0.12	N	N	N	N
151.	Dilsath	50	10121	23	+	+	–	8.4	110000	2	5	11	23	N	0.68	0.13	0.23	N	N	N	N
152.	Yasmin	47	10136	24	+	–	+	6.5	100000	2	5	15	26	N	N	N	N	N	N	N	N
153.	Chitra	16	10134	23	+	–	+	7.5	120000	2	5	11	23	N	N	N	N	N	N	N	N

154.	Shanthi	47	10137	21	+	+	+	8.6	100000	2	4	10	22	N	0.51↑↑	0.13↓	0.23↓	N	N	N	N
155.	Suba	17	10138	24	+	–	+	7.2	130000	2	5	10	24	N	N	N	N	N	N	N	N
156.	Sudha	38	13014	23	+	–	+	7	140000	2	5	10	25	N	N	N	N	N	N	N	N
157.	Meena	48	13015	24	–	–	+	7.4	150000	2	6	11	26	N	N	N	N	N	N	N	N
158.	Lakshmi	47	10141	25	+	+	+	8	100000	2	4	10	22	N	0.51	0.12	0.23	N	N	N	N
159.	Brinda	19	10241	20	–	–	+	6.2	140000	2	4	20	30	N	N	N	N	N	N	N	N
160.	Yashoda	18	10621	25	–	–	+	7.5	130000	2	7	11	24	N	N	N	N	N	N	N	N
161.	Dhanalakshmi	43	10601	26	–	–	+	7.6	140000	2	8	11	26	N	N	N	N	N	N	N	N
162.	Afeez Fathima	17	10152	22.2	–	–	+	8	150000	2	8	11	27	N	N	N	N	N	N	N	N
163.	Rani	16	13016	23.6	–	–	+	8.2	160000	2	7	11	24	N	N	N	N	N	N	N	N
164.	Mumtaj	47	13018	20	+	–	+	8.5	100000	2	4	10	22	N	N	N	N	TB ⊕	N	N	N
165.	Mariyayee	42	13017	26	–	+	+	8.2	120000	2	4	11	22	N	0.235	0.30	0.40	N	N	N	N
166.	Sumathy	45	10163	25	+	+	+	8.6	110000	2	4	11	22	N	0.57	0.12	0.22	N	N	N	N
167.	Shanthi	19	10164	24	+	+	+	8.2	120000	2	5	10	23	N	0.67	0.12	0.22	N	N	N	N
168.	Janci Rani	53	10165	24	+	+	–	8.5	120000	2	5	10	24	N	0.67	0.13	0.23	N	N	N	N
169.	Subbulakshmi	50	10166	24.4	–	–	+	8	120000	2	6	11	23	N	N	N	N	N	N	N	N
170.	Muthulakshmi	38	10143	25	–	–	+	8.2	140000	2	7	11	24	N	N	N	N	N	N	N	N
171.	Sahayamary	40	10144	22	+	–	+	6.5	110000	2	5	11	22	N	N	N	N	N	N	N	N

172.	Mary	18	10145	20	–	+	+	6.2	50000	2	4	10	20	Spleen	N	N	N	N	N	N	N
173.	Brinda	41	10101	21	+	+	+	8	100000	2	5	10	20	N	0.67	0.12	0.23	N	N	N	N
174.	Arayee	42	10111	24	+	+	+	7	100000	2	5	11	22	N	0.68	0.12	0.23	N	N	N	N
175.	Divya	15	10110	20	–	+	+	6.5	52000	N	N	N	N	Spleen	N	N	N	N	N	N	N
176.	Thara	39	10113	23	–	+	+	7.5	120000	2	5	11	23	N	N	N	N	N	N	N	N
177.	Lakshmi Priya	45	10114	22	+	+	–	8	100000	2	5	10	22	Ascitis pl effusion	N	N	N	N	N	N	N
178.	Vanitha	46	10115	23	+	+	–	8.5	90000	2	4	10	22	Ascitis pl effusion	N	N	N	N	N	N	N
179.	Vidhya	17	13104	22.3	–	+	+	6.8	130000	2	4	11	24	N	N	N	N	N	N	N	N
180.	Srividhya	47	12105	24	–	–	+	8.21	90000	2	5	10	22	N	0.51	0.23	0.33	N	N	N	N
181.	Haseena	18	13106	25	–	+	+	7.5	150000	2	4	11	24	N	N	N	N	N	N	N	N
182.	Revathy	50	13107	25	–	+	+	8.2	110000	2	5	10	22	N	0.22	0.45	0.45	N	N	N	N
183.	Rajalakshmi	51	10116	25	–	+	+	7.5	150000	2	4	11	24	N	N	N	N	N	N	N	N
184.	Nagalakshmi	39	10119	25	+	+	–	8.6	110000	2	5	10	20	N	0.67	0.12	0.22	N	N	N	N
185.	Radha	19	10118	22.3	–	+	+	7.4	160000	2	5	11	22	N	N	N	N	N	N	N	N
186.	Kaliyammal	40	10126	20	–	+	+	9.8	62000	N	N	N	N	spleen	N	N	N	N	N	N	N
187.	Muthuammal	42	10127	21	+	+	–	8.2	110000	2	4	10	22	N	0.67	0.12	0.22	N	N	N	N

188.	Veerammal	45	10128	22	+	+	+	8.5	120000	2	5	11	22	N	0.47	0.10	0.30	N	N	N	N
189.	Alagammal	47	10129	22	–	–	+	6.5	160000	2	4	11	22	N	N	N	N	N	N	N	N
190.	Sumathy	17	11320	23	–	–	+	6.6	160000	2	5	11	23	N	N	N	N	N	N	N	N
191.	Raniammal	16	11321	24.2	–	–	+	6.7	160000	2	6	11	24	N	N	N	N	N	N	N	N
192.	Valarmathi	16	11322	20	+	+	–	6.5	100000	2	4	10	22	N	N	N	N	TB⊕	N	N	N
193.	Kannagi	43	11323	22	+	+	+	7.5	120000	2	5	11	23	N	N	N	N	TB ⊕	N	N	N
194.	Backyalakshmi	40	11324	23	–	+	+	5.8	120000	2	4	11	24	N	0.23	0.30	0.45	N	N	N	N
195.	Karpagam	18	11325	22.4	–	–	+	7	170000	2	4	11	25	N	N	N	N	N	N	N	N
196.	Nagammal	17	11326	22.6	–	–	+	7.2	180000	2	5	11	26	N	N	N	N	N	N	N	N
197.	Nagalakshmi	37	12220	20	–	+	+	9.9	67000	2	4	10	22	Spleen⊕	N	N	N	N	N	N	N
198.	Chandra	16	10221	22.4	–	–	+	7.3	170000	2	5	12	23	N	N	N	N	N	N	N	N
199.	Vijayalakshmi	38	10222	22	–	+	+	10	70000	2	4	10	22	spleen⊕	N	N	N	N	N	N	N
200.	Dhanam	40	13202	23	–	–	+	7.4	200000	2	6	11	23	N	N	N	N	N	N	N	N

ABBREVIATIONS

AUB	:	Abnormal Uterine Bleeding
FSH	:	Follicle Stimulating Hormone
LH	:	Luteinizing Hormone
GnRH	:	Gonadotrophic Releasing Hormone
TRH	:	Thyrotropin Releasing Hormone
GABA	:	Gamma Amino Butyric Acid
VIP	:	Vasoactive Intestinal Peptide
ERα	:	Estrogen Receptor α
ERβ	:	Estrogen Receptor β
DuB	:	Dysfunctional Uterine Bleeding
PBAC	:	Pictorial Blood Assessment Chart
ITP	:	Immune Thrombocytopenic Purpura
VWD	:	Von Willebrand's Disease
BT	:	Bleeding Time
aPTT	:	Activated Partial Thromboplastin Time
PT	:	Prothrombin Time
CBC	:	Complete Blood Count
PCR	:	Polymerase Chain Reaction
CA125	:	Carcinoembryonic Antigen
CRH	:	Corticotropic Releasing Hormone
OCPills	:	Oral Contraceptive Pills
BMB	:	Breakthrough Menstrual Bleeding
IUCD	:	Intra Uterine Contraceptive Device